

Recent Agriculture in the Yangtze Delta

A General Review

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Institute of Agricultural Economics, Chinese Academy of Agricultural Sciences
(IAE-CAAS) with the assistance of Shanghai Academy of Agricultural Sciences

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This report is one of the results of the project 'The Experience of Holland Agricultural Development and its Importance to China', a joint research project of the Institute of Agricultural Economics of the Chinese Agricultural Academy of Sciences in Beijing and the Agricultural Economics Research Institute of Wageningen University and Research Center in the Hague. The report analyses situation and development of Chinese agriculture with special attention for the Yangtze Delta. Agriculture is analyzed as a part of the agribusiness and against the background of the development of the Chinese economy as a whole. Furthermore, the role of China's agricultural policies in the transformation process to a socialist market-oriented agricultural sector is highlighted.

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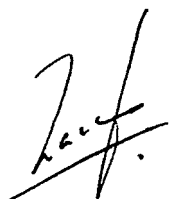
Preface

'The Experience of Holland Agricultural Development and Its Importance to China' is a joint research project of the Institute of Agricultural Economics of the Chinese Agricultural Academy of Sciences (IAE-CAAS) in Beijing and the Agricultural Economics Research Institute (LEI) of Wageningen University and Research Centre in the Hague. The Chinese Ministry of Agriculture, the Dutch Ministry of Foreign Affairs (Asian Facility) and the Dutch Ministry of Agriculture, Nature Management and Fisheries finance the project. Main objectives of the project are:

- to reveal the causes of the large difference in agricultural productivity between China and the Netherlands, and to find ways to improve the efficiency of Chinese agriculture;
- to analyse the developments in Chinese agriculture with special reference to market opportunities for Dutch agribusiness.

This report is one of the results of the project. It analyses situation and development of Chinese agriculture with special attention for the Yangtze Delta. Agriculture is analyzed as a part of the agribusiness and against the background of the development of the Chinese economy as a whole. Furthermore, the role of China's agricultural policies in the transformation process to a socialist market-oriented agricultural sector is highlighted. The report is written by the Chinese co-ordinator of the project Prof. Li Weimin, he is attached to the Institute of Agricultural Economics in China.

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Summary

This report is one of the results of a China-Dutch research project. It intends to provide most important knowledge about the agricultural sector in China, especially in the Yangtze Delta. Besides, the report reveals the Delta's big potentials in its agricultural sector to show opportunities for businessmen from abroad. The main part of this report has the following 6 chapters.

Chapter 2 is devoted to the geographic and historical aspects of the Yangtze Delta. Its fertile soil, plentiful rainfall and abundant sunshine provide very suitable conditions for crop farming. The total area of the Delta is 15% larger than the Netherlands, but its population is about 3.2 times that of the Netherlands. China's modern industry developed mainly in the Yangtze Delta since last two centuries.

Chapter 3 provides economic information of the Delta, which is essential to understand its position in Chinese economy. Shanghai has been the 'dragon head' of Chinese economy to drive the socio-economic development of the country, especially the Yangtze Valley. Following the establishment of the Pudong New Area, the Yangtze Delta has become the centre of attention for foreign investors. Jiangsu is the country's second largest province in terms of GDP, despite its small size. Population density in Jiangsu is among the highest in the country, making it the 4th largest in China. The yields of most farm products are the highest in China. The most significant factor behind South Jiangsu's prosperity is its rural industries, or 'TVEs'. Zhejiang is a small, hilly province. Its territory is nearly as big as Jiangsu, but its population is considerably smaller. The private businesses in Zhejiang are the most prosperous in China. Zhejiang maintained a dynamic trend during the last few sluggish years. The farmers' average income in Zhejiang has increased to an advanced level in China. The Yangtze Delta plays an important role in economic development of the country. That is reflected in its economic position. Out of China's over 2,000 counties, Jiangsu and Zhejiang account for only 6% of the total, while their counties listed in the 'Top-100' comprised about 40% of the total.

Chapter 4 describes the Delta's agricultural sector. Since 1979, under the policy of reform and opening up to the outside world, a new management system has been adopted in rural China: the household responsibility system (HRS). This system has broken the 'big pot' (egalitarianism) in the old system and greatly stimulated agricultural growth in China. As a result of the reform, China has become the biggest producer of major agricultural products in the world today. The current situation of crop and livestock production is described with

many tables. China ranks the first in output of grain, meat, eggs, vegetables and many others. On the contrary, the production of dairy sector is very small. In contrast to its total agricultural output, agricultural worker's productivity in China (as well as in the Delta) remains relatively low. The shares of commodities sold to market are small, especially if it is measured with international standards. Great efforts have to be made to improve this situation, taking into account the changes in policy measures and the institutional factors.

Chapter 5 shows the big urban-rural differences and their linkages in the context of socio-economic systems in China. The purpose of this chapter is to disclose the roots of under-developed market chain from the farmer to the urban consumer. The report analyses the reasons of fast growth of TVEs and their contributions to China's economy (especially in the Yangtze Delta). However, only about 30% of farm products in China were consumed after industry processing in the mid-1990s. The value added of food industry was less than 13% in the industrial sector, only 2 dollars per month on a per capita basis. The report reveals the causes why the majority of TVEs has nothing to do with food processing industry. That can also explain partly the low income of the farmer. The report lists many favourable conditions for the development of food-processing industry, and it will grow at a high speed in the future.

Chapter 6 is about the agricultural policies in China for the current Tenth Five-Year Plan (2001-2005), their possible changes to meet the challenges in the framework of the WTO. It is imperative to solve a series of difficult problems, such as slow down of farmers' income growth, enlarging of inter-regional income gap, difficulties to transfer the surplus agricultural labour, environment degradation, etc. A set of essential new policies has been introduced, for example: Regional policies: to develop agriculture according to comparative advantages, instead of self-sufficiency, to encourage inter-regional co-operation, to implement more flexible migration policy, and to emphasise sustainability of agricultural development in the west region. Structural adjustment policies: to pay more attention to quality rather than quantity, to make more efforts to adjust production structure according to consumers' demand, and to let more TVEs engage in the agriculture-related businesses. Internationalisation: China will open wider its domestic market to foreign companies and its agricultural sector will face strong competition. In the meantime, China will have more opportunities to export labour-intensive products, such as vegetables, fruits, animal products, fish and so on. Possible impacts of these policies are analysed.

The last part, chapter 7 depicts general perspectives of agricultural and economic development in the Yangtze Delta. This Delta is a window, through which people can judge the future development of Chinese economy. The time lag between Shanghai and neighbouring areas might be 5 to 15 years. Many people believe that 'Shanghai's today is our tomorrow'. A possible picture of future development is described from Shanghai to the Yangtze Delta, then to the coastal area and the rest of China. China has been very successful in economic restructuring for the past two decades. The per capita income of China (especially in the Delta) will probably double again within 5 to 10 years. Once the hundreds of millions of Chinese

people double their income, the demand will increase enormously. Many international businessmen are looking for the huge market opportunities not only in the coastal area, but also prepared to go west and north.

1. Introduction

1.1 Aim of the report

This report is intended for all those who are interested in the rural economy of today's China - and especially in its agricultural system - but cannot read Chinese. As one of the reports for the China-Netherlands joint research project, it is mostly oriented towards Dutch agribusiness and the relevant consultation and research institutions. This report provides the most important information about the agricultural sector in the Yangtze Delta, with Shanghai as its centre.

The Delta is one of the most developed regions of China. Located in the central part of the country's coastal area, it is endowed with rich natural resources and a vast hinterland. The Delta was the birthplace of the earliest modern industries and the most important door to the outside world. No-one looking for business opportunities in China should neglect the Delta.

The Yangtze Delta was one of the pioneering areas in China even before the country's economic reforms. The agribusiness sector is one of the most advanced in the country. However, if measured with international indicators, the efficiency of the sector is relatively low, and labour productivity lags far behind that in developed countries. We recognise this situation and want to reveal the Delta's huge potential, thus showing foreign business persons the many opportunities it has to offer.

1.2 Method and data

This report is not an academic paper: it has been written for a wide readership and therefore does not contain sophisticated economic terminology, equations and models. Where appropriate, comparisons between the Yangtze Delta and the Netherlands are made in order to provide Dutch readers with a clear picture of the current situation in this faraway and little known land.

Most of the data in this report were derived from official sources, i.e. various kinds of statistical yearbooks, both national and provincial. However, one must be cautious when using these data, even though they are official: because the statistical system in China needs considerable improvement, the data cannot be considered as exact. Some are the estimates of

local leaders. There are also discrepancies between provinces or cities: some data were lacking or inconsistent, despite the close historical and socio-economic relations between the counties and cities within the Delta.

A small proportion of the data was derived from correspondence with local officials or obtained from case studies. However, all data used for the international comparisons are from the FAO and/or the World Bank (the sources are given in the footnotes).

1.3 Structure of the report

This introductory chapter is followed by six further chapters. Chapter 2 is devoted to the geographical and historical aspects of the Yangtze Delta, and to China's administrative divisions. Chapter 3 provides economic information about the Delta, which is essential in gaining an understanding of its position within the Chinese economy. Chapter 4 describes the Delta's agricultural sector. Terms used in China but not in Western economic literature are given concise explanations.

Chapter 5 provides the background to the urban-rural differences in China and their linkages; this includes information about township and village enterprises (TVEs) and state farms (even some Chinese are confused by the various terms used). Chapter 6 deals with the agricultural policies for the current Five-Year Plan (FYP, 2001-2005), in the context of their recent changes aimed at meeting the possible challenges within the framework of the WTO. The final chapter (chapter 7) presents the general prospects of agricultural development in the Yangtze Delta.

2. The Yangtze Delta: Geography and History

2.1 Geographical features

In Chinese, the Yangtze River is commonly called Chang Jiang (the Long River). It is the largest river in China and - with a length of 6,397 km - the third longest in the world. It arises at 4,000 metres above sea level on the Qinghai-Tibetan Plateau and flows through eight provinces (Qinghai, Sichuan, Yunnan, Hubei, Hunan, Jiangxi, Anhui, and Jiangsu, Tibet Autonomous Region) and two municipalities (Chongqing and Shanghai) before issuing into the East China Sea.

The Yangtze Delta was a part of the Yangtze archicontinent. According to paleo-geographic studies, its western section became hilly due to crustal movement and elevation; its highest point is the peak of Tianmu Mountain (1,587 metres) in Zhejiang. These mountain ranges consist of hard rock formed during the Jurassic Period, but some areas developed during the Cretaceous Period. Its western part is typical sandstone and shale formed between the Ordovician and the Devonian Period. This area is characterised by numerous karst caves and other tourist attractions. The Maoshan Mountains are saddle-shaped: in the south and north they are 200 - 300 metres high, but in between these areas they reach only 50 - 80 metres. The shallow hilly areas have been developed into terraced fields for rice, tea or mulberry plantations, and fruit orchards.

The Yangtze is wide and deep in its lower reaches (especially in the Delta): it is 18 km wide near Nantong and 80 - 90 km wide where it issues into the sea. Few rivers in the world have channels as deep as that of the Yangtze: 10,000-ton ships can reach as far upstream as Nanjing City (the capital of Jiangsu Province).

The flat, eastern part of the Delta - the Taihu Lake Plain - consists of sedimentary matter deposited by the Yangtze River during the Quaternary Period. This process is continuing today. The sand mouth on the Yangtze's south bank took shape about 6,000 years ago, then extended and merged with the estuary of the Qiantang River. On this plain are numerous rivers and streams, and hundreds of small lakes, marshes and channels (see figure 2.1).

Taihu Lake is one of the largest fresh-water lakes in China: it covers 2,425 km² and contains an estimated 4.4 billion cubic metres of water supplied by over 200 rivers. While its average depth is only 2 - 3 m, it plays an important role in flood control in the lower reaches of the Yangtze. The catchment area is over 18,000 km² and is a reservoir-type lake constantly

refreshed with new waters.

The land around Taihu Lake lies at 6 - 8 metres above sea level in the west and 4.5 - 6 metres above sea level in the east. The major crops include rice, wheat, rape and cotton. The soil on the southern side contains more sand and is suitable for cotton, mulberry and ramie cultivation. The central part is the plain itself (2.5 - 4 metres above sea level); it is slashed by hundreds of channels, and during rainy years is prone to flooding and waterlogging.



Figure 2.1 Delta maps

The Grand Canal - which extends from Beijing in the north and crosses both the Yellow River and the Yangtze - terminates in Hangzhou (the capital of Zhejiang Province) in the south. It was constructed as a giant irrigation project in ancient times. With a history of over 2,400 years and a length of 1,801 km, it is one of the oldest canals and the longest man-made waterway in the world. It is a main artery for the Delta and is open to shipping all year round.

The land around Shanghai is open and low (about 4 metres above sea level), and is criss-crossed by the maze of natural waterways in the Taihu drainage basin. Taihu Lake is surrounded by thousands of rural industrial enterprises, and pollution levels in the lake are at an alarming level. The central government's target was to clean up the lake within three years, i.e. by the year 2000; however, the problems still exist in some areas. Many enterprises have been closed down.

The Huangpu River and its tributary - the Wusong (Suzhou Creek) - have their headwaters in Taihu Lake, and are important waterways in Shanghai, China's largest industrial city. The Huangpu River discharges around 10.4 billion cubic metres of water annually into the East China Sea. It is 300 - 500 metres wide, with a depth of 5 - 15 metres. It provides 80% of the water consumed by Shanghai's residents and industries, and is also a good waterway for navigation.

Chongming Island is the world's largest alluvial island and the third largest island in China. It lies in the mouth of the Yangtze River and is bounded by the East China Sea to the

east. Its current area is 1,160 km², but it is continuously growing as a result of soil erosion in the upper reaches of the Yangtze. This island and surrounding islets (which are also made of sand and mud deposited by the Yangtze) constitute a county of Shanghai Municipality. The Yangtze Delta is located in the northern part or the transitory zone of the sub-tropics. This area is characterised by a mild, humid climate with four distinct seasons. The mean annual temperature is about 15.6°C (January 3.1°C; July 28.1°C). The frost-free period lasts 232 days, and the accumulation temperature (during a continuous period with a mean daily temperature of over 10°C) is 5,212.7°C. On average, the Delta has 134.9 rainy days a year; 60% of the rainfall occurs in the summer, i.e. from May to September.

The Delta has always been an ideal area for agriculture purposes, and used to be called the 'land of rice and fish'. Its fertile soil, plentiful rainfall and abundant sunshine provide very suitable conditions for crop farming. Although typhoons and floods sometimes threaten agricultural production in the summer, low temperatures (below zero) and droughts are seldom if ever experienced.

2.2 Three definitions of the Yangtze Delta

Although most middle-school students know where the Yangtze Delta is located, few people can delineate its boundaries. This is not surprising considering there are different definitions of the Yangtze Delta, even among academic circles. The three common definitions are (see figure 2.2 and figure 2.3):

- Definition A: This is the narrowest definition and is based purely on the sedimentary formation. Only a very limited part along the banks of the Yangtze is considered the Delta proper; it even excludes some parts of Shanghai Municipality. This delta is purely geological and lacks systematic socio-economic data.
- Definition B: This definition is mainly used in physical geography and includes the Taihu Lake Plain, i.e. the south-eastern part of Jiangsu Province and the northern part of Zhejiang Province. According to this definition, the Yangtze Delta lies between latitudes 30°20' and 32°48' north and longitudes 119°24' and 121°54' east. The Delta's northern boundary runs from Zhenjiang and Yangzhou eastward to Hai'an County; the south-western border extends from Zhenjiang, along Yixing and Huzhou to Hangzhou Bay (She, 1997). This area is slightly smaller than the Netherlands, but has a much larger population.
- Definition C: This definition coincides with the Shanghai Economic Zone (SEZ), which is based on economic principles and extends far beyond the Delta proper. The SEZ was approved by the central government in June 1992 with the task of promoting closer interprovincial economic co-operation between Shanghai, Jiangsu and Zhejiang. It encompasses Shanghai Municipality as well as 14 neighbouring prefecture-level cities (PLCs; see section 2.3); of these, eight are in Jiangsu and six in Zhejiang. This

Delta is very large, embracing a part of northern Jiangsu Province (along the Yangtze River), and all of southern Jiangsu and northern Zhejiang¹. Its area is estimated at 99,687 km², with a total population of 76.03 million. The population density of this Delta is much smaller, i.e. about 760 persons per km².

¹ The North Zhejiang has 6 PLCs (see figure 2.3), including Zhoushan - an archipelago with hundreds of islands, which are far away from the Yangtze Delta. Apparently, the same is true for other two PLCs - Shaoxing and Ningbo despite the close economic ties among them.



Figure 2.2 The boundaries of the Yangtze Delta: three definitions

2.3 The Yangtze Delta in comparison with the Netherlands

It is easy to understand why the Yangtze Delta was chosen to represent densely-populated parts of China: it simplifies the economic analysis and increases the comparability of this part of China with the Netherlands (e.g. in terms of topography and size of territory), and allows the exploration of the causes of large differences in agricultural productivity between the Delta and the Netherlands. For these purposes, the Yangtze Delta of definition B is better for comparison.

The topography of the Yangtze Delta is in many respects similar to that of the delta formed by the Rhine, Maas and Scheldt in the Netherlands. The land is as flat as a Dutch

polder; the only difference is that the land is above sea level. There are a lot of canals and channels in the Taihu Lake plain, and the lake itself is very similar to the IJsselmeer, as regards both size and functions.

| | Definition A | Definition B | Definition C |
|-----------------------|--|--|---|
| Shanghai Municipality | Baoshan, Chongming, Fengxian, Jiading, Minhang, Nanhui, Pudong | Baoshan, Chongming, Fengxian, Jiading, Jinshan, Minhang, Nanhui, Pudong, Qingpu, Songjiang | |
| Jiangsu Province | Nantong, Haimen, Qidong, Rugao, Tongzhou | Nantong, Hai'an, Haimen, Qidong, Rudong, Rugao, Tongzhou | |
| | Changshu, Taicang, Zhangjiagang | Suzhou, Changshu, Kunshan, Taicang, Wujiang, Wuxian, Zhangjiagang | |
| | Jiangyin | Wuxi, Jiangyin, Xishan, Yixing | |
| | Changzhou, Jintan | Changzhou, Jintan, Wujin | Changzhou, Jintan, Liyang, Wujin |
| | Taizhou, Jiangyan, Jingjiang, Taixing | | Taizhou, Jiangyan, Jingjiang, Taixing, Xinghua |
| | Zhenjiang, Dantu, Danyang, Yangzhong | | Zhenjiang, Dantu, Danyang, Jurong, Yangzhong |
| | Yangzhou, Hanjiang, Jiangdu, Yizheng | | Yangzhou, Baoying, Gaoyou, Hanjiang, Jiangdu, Yizheng |
| | | | Nanjing, Gaochun, Jiangning, Jiangpu, Lishui, Luhe |
| Zhejiang Province | None | Jiaxing, Haining, Pinghu, Tongxiang, Haiyan, Jiashan | |
| | | Yuhang | Hangzhou, Chun'an, Fuyang, Jiande, Lin'an, Tonglu, Xiaoshan, Yuhang |
| | | Huzhou, Changxing, Deqing | Huzhou, Anji, Changxing, Deqing |
| | | | Shaoxing, Shangyu, Shengzhou, Xinchang, Zhuji |
| | | | Ningbo, Cixi, Fenghua, Ninghai, Xiangshan, Yinxian, Yuyao |
| | | | Zhoushan, Daishan, Shengsi |

Figure 2.3 The counties/cities in the Yangtze Delta ^{a)} according to its definition

a) Completely urbanised districts of Shanghai Municipality are not included. The PLCs (see section 2.4) are in bold. The administrative division was that at the end of 1999

Certain socio-economic indicators can be used to compare the Delta (definition B, see figure 2.4) with the Netherlands. Relatively systematic statistical data are essential for a comparative analysis. However, as the Yangtze Delta includes many counties (or cities) that belong to Shanghai, Jiangsu or Zhejiang, the cross-provincial statistics in China are poorly co-ordinated. Although statistical yearbooks are published every year by the statistics bureaux of Shanghai, Jiangsu and Zhejiang, the county-level statistical data are not systematic,

and many lack comparability.



Figure 2.4 The Yangtze Delta: definition B

The total area of this Delta is 15% larger than the Netherlands and its population is about 3.2 times that of the Netherlands. Population density in the Delta is about 2.8 times that of the Netherlands (table 2.1). Some basic data (on area, land use, gross value of agricultural output, agricultural productivity, etc.) were not available for any of the three definitions of the Delta.

Table 2.1 The Yangtze Delta a) in comparison with the Netherlands

| | Area (km ²) | Population (million) |
|--|-------------------------|----------------------|
| | | |

| | | |
|--|--------|-------|
| Shanghai Municipality | 6,340 | 14.74 |
| South Jiangsu (26 counties, 7 PLCs) | 32,160 | 29.71 |
| North Zhejiang (8 counties, 2 PLCs) | 9,190 | 6.40 |
| The Yangtze Delta (1,066 persons/km ²) | 47,720 | 50.85 |
| The Netherlands (459 persons/km ²) | 41,526 | 16.00 |

a) Definition B has been chosen as the area is more comparable. Data on the population density of the Netherlands excludes water surface

Source: Ministry of Foreign Affairs and EVD, 1999.

2.4 The administrative divisions of China

Some Chinese geographical terms cause confusion. Some very large cities (e.g. Beijing and Shanghai) are called municipalities, and there are county-level cities (e.g. Wujiang). What are the differences?

China's administrative units are currently based on a four-level system, which divides the nation's administration into that of: 1) the central government, 2) provinces, 3) counties, and 4) townships (figure 2.6):

- 1) The country is divided into 34 province-level units: i.e. 23 provinces, five Autonomous Regions, four Centrally Administered Municipalities (CAMs) and two Special Administrative Regions (SARs) (figure 2.5). These province-level units are in the same hierarchical position as the ministries of China's central government. The political and economic autonomy in China is as follows (in descending order):

SARs > autonomous regions > CAMs / provinces

| | Provinces (23) | Autonomous Regions (5) | CAMs (4) | SARs (2) |
|-------------------|---|--|----------------------------|------------------|
| Coastal region | Fujian, Guangdong, Hainan, Hebei, Jiangsu, Liaoning, Shandong, Taiwan, Zhejiang | Guangxi (Zhuang a) | Beijing, Shanghai, Tianjin | Hong Kong, Macao |
| Central region | Anhui, Heilongjiang, Henan, Hubei, Hunan Jiangxi, Jilin, Shanxi | Inner Mongolia | - | - |
| Western region | Gansu, Guizhou, Qinghai, Shaanxi, Sichuan, Yunnan | Ningxia (Hui*), Tibet, Xinjiang (Uyгур*) | Chongqing | - |

Figure 2.5 List of provinces, Autonomous Regions, Centrally Administered Municipalities (CAMs) and Special Administrative Regions (SARs)

a) The Autonomous Regions have major ethnic groups, they are: Zhuang, Mongol, Hui, Tibetan and Uyгур

- 2) The province-level units are very important since they receive various kinds of directives directly from the central government (e.g. through the Ministry of Agriculture;

MOA). They make most economic decisions concerning the local level. A province-level unit is subdivided into many prefecture-level cities (PLCs) or prefectures. Prefectures are mainly agriculture-oriented regions, while PLCs are more industry-oriented and economically stronger. The prefecture level is not a jurisdictional layer of administration. This level plays only a quasi-provincial role so that the provincial bureaux do not always need to deal directly with a large number of counties (there are usually 50 - 100+ counties in a province). Commonly, a province has 10 to 20 prefectures or PLCs. Statistical data are usually reported at this level. CAMs have only districts (mainly in industry-oriented urban areas) and counties (only in suburban areas, which have more farming activities).

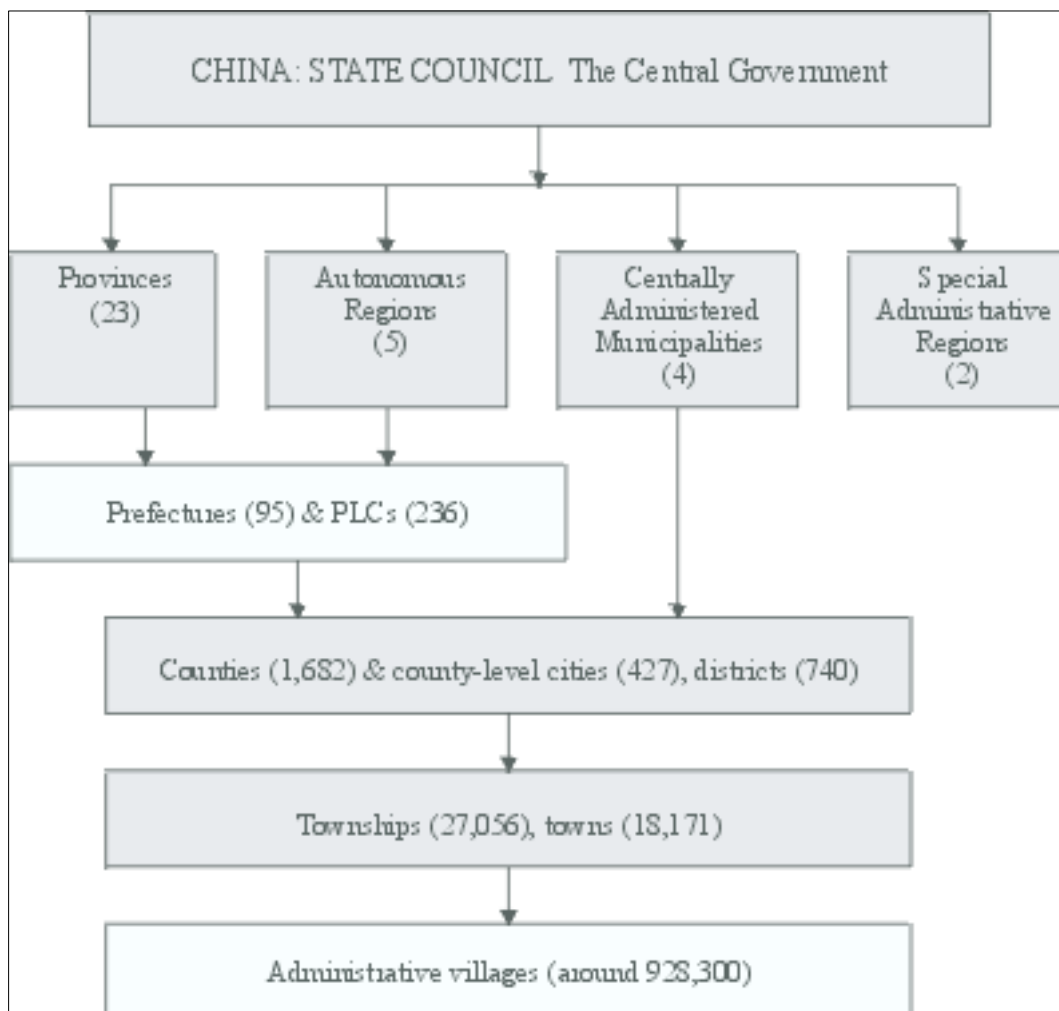


Figure 2.6 The administrative divisions of China (as at the end of 1999)

- 3) The county is the most practical level: all actions are taken at this level. Both provincial and national statistics should come from this level. The problem is that not every provincial statistical yearbook contains the county-level data, and if it does, the data might not be consistent, or the indicators are different. This makes cross-provincial comparisons quite difficult (see notes to tables 3.2 and 3.3). A case study is therefore a useful supplementary method.

A county or a county-level city is subdivided into townships and/or towns. This is the grassroots level in China. In 1984, People's Communes - which also had administrative power - were turned back into townships. The administrative villages are equivalent to the former production brigades (production units only).

All the cities and counties in the Delta (definition B) are laid out in figure 2.7 according to their administrative levels.

| | PLCs | Districts | County-level cities | Counties |
|-----------------------|--------------|---|---|-----------------------------|
| Shanghai Municipality | - | Baoshan, Jiading, Jinshan, Minhang, Pudong, Qingpu, Songjiang | - | Chongming, Fengxian, Nanhui |
| Jiangsu Province | Nantong | - | Haimen, Rugao, Qidong, Tongzhou | Hai'an, Rudong |
| | Suzhou | - | Changshu, Kunshan, Taicang, Wujiang, Wuxian, Zhangjiagong | - |
| | Wuxi | - | Jiangyin, Xishan, Yixing | - |
| | Changzhou | - | Jintan, Liyang, Wujin | - |
| | Taizhou a) | - | Jiangyan, Jingjiang, Taixing | - |
| | Zhenjiang a) | - | Dangyang, Yangzhong | Dantu |
| | Yangzhou a) | - | Jiangdu, Yizheng | Hanjiang |
| Zhejiang Province | Jiaxing | - | Haining, Pinghu, Tongxiang | Hanyan, Jiashan |
| | Hangzhou a) | - | Lin'an, Yuhang | - |
| | Huzhou a) | - | - | Changxing, Deqing |

Figure 2.7 The Yangtze Delta: administrative units a) (as at the end of 1999)

a) Based on definition B; if a PLC is marked with an asterisk, it means that only some of the counties are included in the Delta. Jiangsu and Zhejiang have only PLCs, i.e. they no longer have any prefectures

2.5 History and culture

Historical records concerning agriculture in the Yangtze Delta date back to as early as the Zhou Dynasty (i.e. from the 11th century to 256 BC). Rice was one of the main grain crops. The handicraft industry included bronze farm-tools, textiles, pottery and boats. Agriculture - especially horticulture and animal husbandry - was considerably developed in the Qin Dynasty (221 BC to 206 BC) and the Han Dynasty (206 BC to 220 AD). The Delta became one of the main marketplaces of ancient China.

Feudal China had its golden age from the 6th to the 10th century (mainly during the Tang Dynasty). Society was relatively stable and the population grew quickly. Both agriculture and trade were strongly promoted, owing to the favourable natural conditions in the Yangtze Delta and its easy access via many waterways (rivers, Taihu Lake, the Grand Canal and the East China Sea). This made the Delta one of the most developed regions in China. The 10th century saw two major advancements in the Delta: the implementation of irrigation and drainage projects to ensure the steady growth of agricultural production, and the use of the lake mud and grass as manure (after composting).

The Song Dynasty (960-1279) experienced frequent wars and invasions from the north. The rulers levied provisions from the prosperous Delta. The peasants had to deliver more grains and other farm products. The two-crop system (e.g. rice-wheat or rice-vegetable) was adopted in the area in order to increase crop yields.

Cotton as a new crop was introduced for the first time in Shanghai. At the time, a certain woman was famous in the sphere of cotton growing; the villagers called her 'Grandma Huang Dao'. Cotton and silk production and the textile industry were already important in the Yuan Dynasty (1279-1368) because the government encouraged these goods for export. In-kind tax was to be paid by delivery of cotton or silk products. An adult was obliged to plant 20 mulberry trees a year. This boosted the economy and from then on the Delta became the centre of China's textile industry. The industry underwent further growth during the Ming Dynasty (1368-1644). More specialised households producing mainly cocoons, melons or fruits appeared in the Delta. The increase of booming towns in the Delta was a signal of great social changes, which historians saw as the first sprouts of capitalism. Hangzhou was the capital during the Southern Song Dynasty (1127-1279), while Nanjing was the capital during the Ming Dynasty and after the 1911 Revolution. In contrast to Beijing - with its solemn imperial palaces and lama temples - Suzhou, Hangzhou and the surrounding cities have many southern-style gardens and Buddhist temples and pagodas, which integrated religious culture and natural beauty. The Delta is rich in cultural heritage. Zhejiang and Jiangsu are both leading provinces for tourism in China.

Shanghai's history is short. It was a small village until it became a commercial port in 1843. British and other European powers seized some ports in eastern and southern China (including Shanghai and Hong Kong) during the Qing Dynasty (1644-1911), and the Manchurian government was forced to open the doors to Western powers. As international trade developed, cheap rice imported from Vietnam, Thailand and Burma was unloaded in

Shanghai and then transported to Hangzhou and Suzhou. The grain price in the Delta dropped rapidly ¹. More and more cropland was shifted to such cash crops as cotton, vegetables and melons, and to animal husbandry (mainly pigs). The influx of foreign citizens and traders into the densely populated region increased the demand for all kinds of food and other farm products, including unknown vegetables and flowers. By 1915, for example, the area under flower production amounted to several hundred hectares. Greenhouses were constructed, and many new, high-yielding breeds of hens and pigs were introduced. The Delta became the most developed region in China.

As China's modern industry developed mainly in the Yangtze Delta, Shanghai became the country's most important industrial and commercial centre. Influenced by European missionaries and businessmen, the Delta was among the first regions to accept European cultures and ideologies. Shanghai became one of the most important cultural centres at the beginning of the 20th century. The first modern newspaper was published in Shanghai. Publications and journals flourished. Shanghai published the majority of translations of foreign literature. Most Western banks and companies settled in Shanghai. The Europeans and Americans built different styles of settlements and churches, which made the city one of the most modern and colourful cities in Asia in the 1930s. Shanghai became the 'Oriental Paris'. The capitalist economy developed in the Yangtze Delta and surrounding areas, if the process was not interfered with. The Chinese attempted to develop capitalism by learning from the West, but this process was halted by the continuous civil wars, and especially by the Japanese aggression against China from 1937 to 1945. The national economy was devastated.

The People's Republic was founded in 1949. This was followed by a series of hasty political movements during the 1950s, 1960s and 1970s, which resulted in great damage to China's economy. The turning point was the policy adopted by the 3rd Plenum of the Party's 11th Central Committee (December 1978). The policy's priority began to shift from the political arena to economic reconstruction. The reform and opening-up policy brought about tremendous changes in China.

The Delta is the homeland of a galaxy of famous Chinese philosophers, poets, writers, scientists, economists, artists, architects, painters, calligraphers, etc. In recent years, many new museums, libraries, theatres and stadiums have been constructed. The area has over 50 universities and colleges, including Fudan, Jiaotong, Tongji, Nanjing and Zhejiang Universities. Hundreds of research institutions in the fields of biotechnology, genetics, medicine, astronautics and IT, etc. are concentrated in this area. New high-tech zones have been opened for students returning from the US, Europe and Japan. Many universities and col-

¹ This is more or less comparable with the cheap imports of grain in the Netherlands from America in the last part of the 19th century. Grain trade caused the agricultural crisis in some European countries. Pudong means 'East of the Huang-Pu River', i.e. east Shanghai, which was less developed area of the municipality and was very rural. The commercial and financial business was concentrated in the west of the Huangpu River.

leges are undergoing reforms and are now equipped with modern facilities.

The Delta is one of the most prosperous areas in China. The country's economic growth rate has been relatively high for the last two decades, and the Delta's economic performance has been better than the country as a whole.

3. The Yangtze Delta: Economic Features

3.1 Shanghai: the 'dragon head' of the Chinese economy

Shanghai (population 14.7 million) is the largest industrial and commercial city in China. The city grew from a small fishing village into a modern metropolis in just a century. Benefiting from its dual role as sea and river port, Shanghai has become China's foremost transportation hub. The Huangpu River serves as an excellent harbour. At high tide, ocean-going vessels can sail up the river to the city. Until the 1940s, Shanghai was mainly a commercial and financial centre.

After the 1950s, Shanghai experienced major reconstruction and became an industrial city. The city is able to supply the country with almost all kinds of industrial products. Heavy industry (especially the metallurgical and chemical and petrochemical) predominated in Shanghai until the late 1970s. Light industry (textiles, food, medicines, stationery, bicycles, electronics, watches and cameras, cosmetics, toys, etc.), though also very important and famous in Shanghai, slowly shifted to neighbouring regions. A very long list of consumer goods can be compiled, for both the domestic and international markets. For more than three decades - i.e. from the 1950s to the early 1980s - the city was considered a showcase or the locomotive of the Chinese economy.

After the special economic zones (SEZs) were set up in the southern coastal areas in 1980, Shanghai's outstanding role in China's economy was outshone to some extent, partly as the result of the long-standing planned economy and the predominance of the state-owned enterprises in the city.

Shanghai is the biggest port in the country: it handles 18% of China's import/export trade and accounts for around 20% of the country's foreign trade. As early as November 1979, Shanghai and Rotterdam became sister cities. According to data released by the Shanghai Municipal Customs Office, the city's total volume of imports and exports amounted to USD 76.15 billion in 1999, which was 19.6% more than in 1998.

Shanghai is one of the biggest bases for the food processing industry. With a suburban area much smaller than that of Beijing, Shanghai is one of the biggest users of agricultural products, ranging from grains, meat, eggs, milk, fish, sugar, oils, vegetables, fruits and tea, to cotton, wool and hide; a large proportion of these products are processed. The Yangtze Delta supplies Shanghai with only some of the products (mainly vegetables and fish); the rest has to be transported from other provinces, or imported from abroad (rice, wheat flour, feed

grains, fruits, coffee, cocoa, dairy products, etc.). Many other provinces also export their products to the world market through the port of Shanghai.

In the new situation, Shanghai has established two aims as regards industrial development: to strengthen its high-tech industry (e.g. satellites, rockets, aircraft, highly efficient computers, microelectronics, robots, atomic energy, large-scale equipment, scientific instruments, automobiles, ships, etc.) in order to improve its international competitiveness, and to develop and upgrade light industry in order to reduce pollution, alleviate transport congestion, and compensate for the energy and raw material shortages associated with heavy industry. Shanghai's GDP accounted for 5% of the country's GDP, and its financial revenue (consisting mainly of taxes and various fees) amounted to about 12% of the nation's total. In 1999, GDP totalled 405.5 billion yuan; per capita, this was 30,805 yuan (USD 3,720).

Shanghai's economic structure is now similar to that of a developed country: primary industry (agriculture) accounts for 2%, secondary 48.4% and tertiary (services) 49.6%. Compared to an international metropolis, however, Shanghai's service industry lags behind.

Strong economic growth means more capital is available for better living conditions, including house construction and infrastructure. Shanghai is the only city in China with two international airports. In addition to the Nanjing-Shanghai and Hangzhou-Shanghai railway lines, new highways connect major cities in the Yangtze Delta with the terminal in Shanghai. A feasibility report for the Beijing-Shanghai express railway has been approved and construction will start during the current FYP. Other infrastructure facilities have been upgraded in recent years, creating a good environment for economic development.

Based on the success of Shenzhen and other SEZs, Deng Xiaoping recognised the urgent need to revive Shanghai by establishing a similar SEZ. This led to the development of Pudong New Area ¹ in 1990. Since then, four smaller development zones ² have been established in Pudong. Shanghai's advantages as regards its geographical location and professional personnel has made Pudong extraordinarily attractive. The majority of foreign-invested enterprises in Pudong are backed by well-known transnational corporations.

Pudong's GDP growth rate has been considerably higher than the other parts of Shanghai for many years. State-owned enterprises in Pudong have greatly improved their performance in the process of their transformation. Both the investment environment and the infrastructure have been greatly improved. Pudong International Airport opened in 1999. The first phase of the second subway line has now been completed. More cross-river

¹ Pudong means 'East of the Huang-Pu River', i.e. east Shanghai, which was less developed area of the municipality and was very rural. The commercial and financial business was concentrated in the west of the Huangpu River.

² These are Waigaoqiao Free Trade Zone (FTZ), Lujiazui Finance and Trade Zone, Jinqiao Export Products Processing Zone, and Zhangjiang High-tech Park. Originally, the FTZ's planned area in Waigaoqiao was 5.5 km² located on the southern shore of the mouth of the Yangtze. It is the biggest and most open FTZ in China. It is said that any business with the FTZ is considered as international trade. For example, to transport goods into the FTZ means export.

(Huangpu) bridges and highways will connect Pudong with the western part of Shanghai.

The government stipulated that buying or selling in the Free Trade Zone (FTZ) in Pudong would be regarded as import or export, and enjoy preferential policies. The companies registered inside this area enjoy zero tariffs and other preferential treatment. To promote international business, the Waigaoqiao FTZ, for example, is to expand for the fourth time in October 2000, as a result of the large amount of investments that have been attracted to it since 1999. At present, most of the current 6.1 km² have been leased out, mainly to manufacturing, warehousing and distribution industries. The developed area of Waigaoqiao FTZ will be 8 km² after the expansion. Shanghai has almost completed the first three phases of the construction plan for Waigaoqiao Deep Water Port. The new Pudong International Airport has also helped Waigaoqiao FTZ expand by bringing in more cargo. More flexible and favourable policies are practised here, e.g. Renminbi (RMB) yuan. The Chinese currency is not convertible on capital account¹ and the exchange rate is under government control. Only a limited number of foreign banks are allowed to do RMB business in designated spheres. As an experiment, 19 of the 48 foreign banks in Pudong were given permission to conduct RMB business in 1999. When China joins the WTO, more foreign banks will enter the financial market and the application process will be shortened. The 5th Fortune Global Forum - the largest-ever sponsored by Time-Warner Group Inc., USA - was held in Pudong in September 1999. Some 300 chairmen, presidents and CEOs of prominent multinationals (including Royal Dutch/Shell) attended the forum. This shows the importance of Shanghai to the Chinese economy.

Following the establishment of the Pudong New Area, the central government approved the opening of ten more cities along the Yangtze River. Currently, the open belt extends from Pudong in the east to Chongqing and Sichuan in the west, encompassing about 50 large and medium-sized cities (table 3.1). Endowed with a vast territory (over 1.5 million km²), a large population (474 million) and a relatively cheap labour force (a rich natural resource), the open belt along the Yangtze River Valley has a substantial industrial and agricultural foundation and the greatest potential for development. Wuhan is the biggest city and an important port in central China. Chongqing became the fourth CAM in the country in 1997, which is a clear signal from the central government to make more efforts to develop this region. The infrastructure is improving rapidly. The Three Gorge Hydroelectric Project is going smoothly, and large-tonnage vessels can reach Wuhan and Chongqing.

Table 3.1 Major cities in the Yangtze Economic Belt a)

| Area | Population | GDP | PLCs or prefectures |
|------|------------|-----|---------------------|
|------|------------|-----|---------------------|

¹ RMB yuan was made convertible on the current account in 1998.

| | | | | |
|-----------|---------|-------|---------|--|
| Shanghai | 6.34 | 14.7 | 403.5 | – |
| Jiangsu | 102.6 | 72.1 | 769.8 | Nanjing, Suzhou, Wuxi, Changzhou, Nantong, Yangzhou, Zhenjiang (7) |
| Zhejiang | 101.8 | 44.8 | 536.5 | Hangzhou, Jiaxing, Huzhou, Ningbo, Shaoxing, Zhoushan (6) |
| Anhui | 139.6 | 62.4 | 290.9 | Hefei, Ma'anshan, Wuhu, Tongling, Anqing, Chizhou, Chaohu (7) |
| Jiangxi | 166.9 | 42.3 | 196.3 | Nanchang, Jiujiang, Jingdezhen (3) |
| Hubei | 187.4 | 59.4 | 385.8 | Wuhan, Huangshi, Jingsha, Yichang, Ezhou, Huanggang, Xianning (7) |
| Hunan | 211.8 | 65.3 | 322.7 | Changsha, Yueyang, Changde, Yiyang (4) |
| Chongqing | 82.4 | 30.8 | 148.0 | Wanzhou, Fuling (2) |
| Sichuan | 488.0 | 85.5 | 371.2 | Chengdu, Luzhou, Panzhihua, Yibin (4) |
| <hr/> | | | | |
| Total | 1,543.9 | 477.3 | 3,434.6 | |
| <hr/> | | | | |

a) This table is based on Xu Guodi (1999). The PLCs or prefectures included here constitute the Yangtze Economic Belt. The statistical figures are taken from China Statistical Yearbook and the statistical yearbooks of the provinces concerned, 2000. Area in 1,000 sq. km, population in millions, GDP in millions of yuan. The cities in bold letters are capitals of the provinces

In recent years the Yangtze Valley has become the centre of attention for foreign investors. Shanghai and the Yangtze Delta are the 'dragon head' driving the socio-economic development of the Yangtze Valley. The Yangtze River is a 'golden' waterway. At the end of 1998, over 60,000 foreign-invested enterprises had been approved there, with negotiated foreign investment exceeding USD 100 billion.

3.2 Jiangsu: a plain province

Jiangsu is the country's second largest province in terms of GDP (770 billion yuan), despite its small size (102,600 km²). In 1999, its population amounted to 72.13 million, making it the fourth largest in China. Population density in this province is among the highest in China, especially in the Taihu Lake Plain. In Jiangsu, 32 cities (or counties) have a population of over a million and 36 counties (or cities) have more than half a million people; only nine counties (or cities) have a population below that level.

Table 3.2 *Some important data on three PLCs in South Jiangsu (1998)*

| | Suzhou | Wuxi | Changzhou |
|---------------------------------------|---------|---------|-----------|
| Population (1,000) | 5,754 | 4,322 | 3,408 |
| Rural population (1,000) | 3,825 | 2,612 | 2,104 |
| Percentage of rural population (%) | 66.5 | 60.4 | 61.7 |
| Labour force in rural area (1,000) | 2,231 | 1,585 | 1,313 |
| GDP (million yuan), 1998 | 125,001 | 105,201 | 50,460 |
| Per capita GDP (yuan) | 21,733 | 24,338 | 14,842 |
| Farmer's per capita net income (yuan) | 5,347 | 5,018 | 4,289 |
| Total import & export (USD million) | 9,250 | 4,328 | 1,594 |
| Export a) (USD million) | 5,645 | 2,955 | 1,310 |

a) The import figures were not in the statistical yearbook, but the export volume has been highlighted. There are no breakdowns into exports and imports. See also note under table 3.3

Source: Statistical Yearbook of Jiangsu, 1999.

As a whole, Jiangsu's territory is a plain, with a very small percentage of hilly area. The total area of cultivated land was 4.45 million ha in 1998. The natural conditions for agriculture probably are the best in China. The yields of most farm products are the highest in the country. One of the major limitations is the very small size of the farms (less than 1/3 ha per agricultural worker). In Jiangsu, the diversification of the rural economy and a surplus rural labour force are typical factors. The regional difference is very obvious: the industrialised southern part is quite wealthy (approaching the level of Shanghai), while the northern rural area lags behind considerably. In 1999, the province's per capita GDP was 10,665 yuan (USD 1,288); the disposable income per capita was 6,538 yuan in the urban area and 3,495 yuan in the rural area. The most significant factor behind South Jiangsu's prosperity is its rural industries. TVEs began to boom here as early as the late 1970s. This was possible because of its geographical conditions (close to Shanghai and good infrastructure). The majority of rural labourers in the Taihu Lake Plain work in TVEs and other industrial projects, although they still live in their hometown or village. The industrial and other non-agricultural output value accounts for over 90% of the total GDP in many cities (or counties). Recently, some well-known international companies have set up joint ventures in the high-tech parks here. Injected foreign capital and technologies have increased the area's economic vitality.

Suzhou is one of the most important cities on the plain. The city proper has 1.08 million inhabitants. It has 2,500-year history and is one of the most famous tourist destinations in China. The ancient gardens of the city were recognised by UNESCO as a World Cultural Heritage Site in December 1997. Suzhou has set up a modern high-tech industrial park jointly with Singapore; this is one of the most developed PLCs in China. Philips Consumer Electronics of Suzhou Ltd was launched in August 1994.

3.3 Zhejiang: a vigorous province

Zhejiang is a small, hilly province. It is slightly smaller than Jiangsu (101,800 km²), but its population is considerably smaller (44.75 million, or 62% of Jiangsu's population). Zhejiang's total area of cultivated land (2.12 million ha) and per capita farmland are much smaller than Jiangsu's, and its average farm size is even smaller (table 3.3). The northern region, being a part of Taihu Lake Plain, is almost as rich as South Jiangsu. The southern part of Zhejiang is mountainous and covered by forests, and the economy is relatively less developed.

As a hilly province with very limited farmland, Zhejiang's natural conditions for grain farming are not good enough to support its population. Its southern part is opposite Taiwan. As in Fujian province, the state did not invest in this region during the 1950 - 1970 period due to possible military action. Although today the people of Wenzhou¹ City and its surroundings are famous for their entrepreneurship, for a long time they were poor and had to travel to every corner of the country to earn a living.

Although Zhejiang has a similar industrial and economic structure as neighbouring Jiangsu, the private or individual businesses are the most prosperous in China and play a much more important role than they do in any other province. Zhejiang people, especially in Wenzhou, have shown their ability to get rich by developing private businesses. This is why entrepreneurs there are encouraged especially by the amended Constitution, which recognises the legal status of the country's private sector. The private sector in Zhejiang is gaining vitality and competitiveness by upgrading its technologies.

In 1999, the province's per capita GDP was one of the highest in China (12,037 yuan / USD 1,454), because a larger proportion of rural labourers work in TVEs (unlike those in Jiangsu, many of Zhejiang's TVEs are private) or other non-agricultural businesses. There are many well-known specialised markets for various commodities in this province. Both urban and rural residents enjoy quite a high income by Chinese standards: 8,428 and 3,948 yuan, respectively, in 1999. More importantly, Zhejiang maintained a dynamic trend during

¹ It is interesting to note that Wenzhou City has historically been a port from which many Chinese migrate to other countries. It is one of the hometowns of tens of thousands of overseas Chinese. It is reported that almost half of the Chinese in the Netherlands came from Wenzhou.

the last few sluggish years, during which farmers' income growth was the highest in China. The farmers' average income in Zhejiang has increased to an advanced level in the country, and is higher than in neighbouring Jiangsu. Economic development in this province has been very fast and the inter-regional income discrepancy is relatively small compared to Jiangsu.

Table 3.3 *Some important data on three PLCs in North Zhejiang, 1998*

| | Hangzhou | Jiaxing | Huzhou |
|---------------------------------------|----------|---------|--------|
| Area (km ²) | 16,596 | 3,915 | 5,817 |
| Population (1,000) | 6,116 | 3,299 | 2,548 |
| Agricultural population (1,000) | 4,011 | 2,567 | 1,958 |
| Percentage of rural population (%) | 65.6 | 77.8 | 76.8 |
| Rural labour force (1,000) | 2,498 | 1,505 | 1,138 |
| in agriculture (1,000) | 1,277 | 764 | 670 |
| in industry (1,000) | 589 | 490 | 270 |
| GDP (million yuan), 1998 | 113,488 | 44,503 | 32,454 |
| Per capita GDP (yuan) | 18,611 | 13,502 | 12,742 |
| Farmer's per capita net income (yuan) | 4,006 | 4,120 | 3,865 |
| Export (USD million) | 1,696 | 545 | 375 |

Note: The author tried to make tables 3.2 and 3.3 more comparable, but failed in breakdowns for the PLCs, let alone for individual counties. For Jiangsu's cities, the data concerning area were not available. Here, 'agricultural population' seems to be the 'rural population' as that is followed by a line for 'rural labour force in agriculture'. Although rural population and agricultural population in China were basically the same in the past, today they differ. Other inconsistent indicators are caused by the same problems. For example, farmer's per capita net income was not reported in Jiangsu, while imports were lacking in Zhejiang
Source: Statistical Yearbook of Zhejiang, 1999.

Zhejiang is one of the provinces with the most tourist attractions. The Zhoushan Archipelago and the coastal area of the East China Sea used to be two of the most productive fishing areas in China, but water pollution (red tides, due to eutrophication) and the depletion of fish resources have become a big concern.

3.4 Economic position of the Yangtze Delta

Since statistics for the counties or cities of the Yangtze Delta (as listed in figure 2.3) are not available, some data on Shanghai Municipality, Jiangsu and Zhejiang Provinces are used for comparison in order to show the economic position of the Delta in the country (table 3.4).

Table 3.4 *The Yangtze Delta: an economic overview, 1999*

| | Shanghai | Jiangsu | Zhejiang | China |
|--|----------|---------|----------|----------|
| Land area (1,000 km ²) | 6.3 | 102.6 | 101.8 | 9,600.0 |
| Year-end population (millions) | 14.74 | 72.13 | 44.75 | 1,259.01 |
| GDP (billion yuan) | 403.5 | 769.8 | 536.5 | 8,042.3 |
| % of the country | 5.02 | 9.57 | 6.67 | 100.0 |
| Per capita GDP (yuan, current value) | 30,805 | 10,665 | 12,037 | 6,534 |
| Equivalent in USD (8.28 yuan = 1\$) | 3,720 | 1,288 | 1,454 | 789 |
| National average as the unit | 4.71 | 1.63 | 1.84 | 1.00 |
| Share in GDP (%) - Agriculture | 2.0 | 13.0 | 11.8 | 17.7 |
| - Industry | 48.4 | 50.9 | 54.1 | 49.3 |
| - Services | 49.6 | 36.1 | 34.1 | 33.0 |
| Area of cropland (1,000 ha; 1996 data) | 315 | 5,062 | 2,125 | 130,039 |
| Rural labour force, agriculture (1,000) | 904 | 15,050 | 10,736 | 329,118 |
| Rural labour, non-agriculture, (1,000) | 1,672 | 12,044 | 10,166 | 104,269 |
| Ratio of non-agr. labour to agr (%) | 65 : 35 | 44 : 56 | 49 : 51 | 24 : 76 |
| Cropland per rural worker (ha) | 0.12 | 0.19 | 0.10 | 0.30 |
| GOVA a) (billion yuan) | 20.7 | 183.7 | 100.5 | 2,451.9 |
| GOVA - Crop farming | 8.8 | 109.5 | 51.9 | 1,410.6 |
| GOVA - Livestock | 8.6 | 41.4 | 15.7 | 699.8 |
| GOVA, ratio of crop to livestock (%) | 50 : 50 | 73 : 27 | 77 : 23 | 67 : 33 |
| Agr. labour productivity b) (1,000 yuan) | 22,887 | 12,209 | 9,363 | 7,450 |
| Equivalent in USD | 2,764 | 1,475 | 1,131 | 900 |
| National average as the unit | 3.07 | 1.64 | 1.26 | 1.00 |
| Land productivity (1,000 yuan/ha) | 65,662 | 36,300 | 47,297 | 18,855 |
| Equivalent in USD | 7,930 | 4,384 | 5,712 | 2,277 |
| National average as the unit | 3.48 | 1.93 | 2.51 | 1.00 |
| Value added of TVEs (billion yuan), 1998 | 48.3 | 197.5 | 211.9 | 2,118.7 |
| As % of the country | 2.23 | 9.32 | 10.00 | 100.00 |
| Per capita rural net income (yuan) | 5,409 | 3,495 | 3,948 | 2,210 |
| National average as the unit | 2.45 | 1.58 | 1.79 | 1.00 |
| Per capita living expenditure per year | | | | |
| Urban households (yuan) | 8,248 | 5,011 | 6,522 | 4,616 |
| Rural households (yuan) | 3,867 | 2,294 | 2,807 | 1,577 |

a) GOVA: gross output value of agriculture; b) Gross output value of farming, livestock, fishery and forestry divided by total number of agricultural labourers or area of cultivated land

Source: State Statistics Bureau: China Statistical Yearbook, 2000, 1999.

The State Statistics Bureau made an evaluation of the 'comprehensive strength' of all counties or county-level cities, using a series of selected economic indicators, which resulted in a list of the top 100 counties in China since 1991. The top 100 are concentrated in the coastal regions of China. Out of a total of 2,109 counties or county-level units, Jiangsu and Zhejiang account for only 6% of the total, while their counties listed in the Top 100 comprised about 40% of the total. This can be compared to fast-growing Guangdong province with its two Special Economic Zones (Shenzhen and Zhuhai, neighbours of Hong Kong and Macao). The changes over time are shown in table 3.5. As a main part of the Yangtze Delta, the counties and county-level cities in South Jiangsu (especially bordering Shanghai Municipality) rank among the highest in the province. Of the 15 counties of Jiangsu on the top 100 list, 14 were in the Yangtze Delta (definition B). In contrast, there were eight counties (i.e. altogether eight counties) in this Delta of North Zhejiang. If one uses the very broad Delta of definition C, then another 13 counties are on the list of the Top 100 in Zhejiang, and another three even in that Delta.

This means the regional differences are relatively small even in hilly Zhejiang Province, and unbalance in economic growth between South and North Jiangsu is more evident. The momentum of economic growth in Zhejiang as a whole seems stronger than in Jiangsu, judging from the top 200 and the trend during the 1990s.

Table 3.5 The top 100 and top 200 counties in the Yangtze Delta (definition B) Jiangsu, Zhejiang and Guangdong a)

| | Jiangsu | Zhejiang | Guangdong |
|--------------------------|---------|----------|-----------|
| Total number of counties | 64 | 63 | 77 |
| Number of top 100 | | | |
| 1991 | 22 (19) | 12 (3) | 14 |
| 1994 | 25 (12) | 23 (8*) | 15 |
| 1999 | 15 (14) | 24 (8*) | 13 |
| Top 200 in 1999 | 24 | 33 | 18 |
| Ranking in top 200 | | | |
| 1 - 25 | 9 | 3 | 4 |

| | | | |
|-----------|---|----|---|
| 25 - 50 | 4 | 6 | 5 |
| 51 - 100 | 2 | 15 | 4 |
| 101 - 150 | 1 | 7 | 3 |
| 101 - 200 | 8 | 2 | 2 |

a) The numbers in brackets indicate the counties on the Top 100 list, which are located in the Yangtze Delta (definition B). All eight counties in Zhejiang's part of the Delta have been included since 1994. Guangdong province is for comparison

Source: Diaoyan Shijie (World of Statistics and Research), State Statistics Bureau 2000.

4. The Delta's Agricultural Sector

Agricultural development in the Yangtze Delta is the highest in the country. The area is famous for its fertile land, rice, silk and fish. Rice is the most important crop, occupying almost two-thirds of the total amount of arable land. This chapter gives a brief review of the current agricultural situation in the Delta. Some useful terms in Chinese agricultural policies since the reform are explained (see also chapter 5). International comparisons are made if the data were available.

Many economic indicators in the Delta are totally dependent on which definition is chosen (e.g. area of cultivated land, population, agricultural output, etc.). The agricultural situation in the Delta described here presents only a general picture due to a lack of detailed and reliable data (breakdowns by county). The figures quoted were derived from various sources, including studies by the State Planning Committee (SPC), the Institute of Geography of the Chinese Academy of Sciences (IG-CAS) and Shanghai Academy of Agricultural Sciences (SAAS). Some of the figures might be controversial.

Agriculture on the state farms is discussed in chapter 5 (section 5.6) because they use a different management system and apply different policies.

4.1 Land use and labour force

Arable land and fresh water are valuable resources in any country, but they have special significance in populous China. Apart from the shortage of per capita natural resources, this situation is to some extent a result of underpriced irrigation water and arable land's lack of an explicit price¹. Renting land for agricultural and non-agricultural use is permitted with official approval, but the selling and buying of land is illegal.

A farmer can use the land plots, but does not own them. As he has the right to use the 'priceless' land, he will never give up his plots even he finds a profitable off-farm job. If he has no time to work his plots, he prefers to re-contract his land-use right by agreement with neighbours or relatives. The land serves as a kind of social insurance policy. In practice, the

¹ Land in urban areas and all non-arable land belong to the state. Arable land in rural areas belongs to the rural community - collectives, hence the collective ownership of land. When the requisition of collective land is necessary for public purposes (roads, reservoirs, etc.), the state pays for it at different rates.

specialised farm households have a larger area after re-contracting. However, even then the largest farm is no more than 10 ha.

Professor She's study (1997) contains useful information about the land use in Delta C. Table 4.1 is the author's adjusted version of She's report, which concerns a Delta that falls somewhere between definition C and definition B because four PLCs (Nanjing, Shaoxing, Ningbo and Zhoushan) have been excluded. In this way, this Delta still has an area of 74,377 km², which is twice as large as Delta B. As a result, the mountainous counties in North Zhejiang have contributed greatly with their forest area, which makes the forest's share much larger than in Delta B. In fact, the plain area of North Zhejiang has a larger percentage of arable land than the 21% indicated in table 4.1.

Another source comes from the SAAS ¹, which gives the total area of arable land as about 1,677,100 ha in the Yangtze Delta. Of this, 281,000 ha are in Shanghai Municipality, 755,900 ha in South Jiangsu and 630,200 ha in North Zhejiang. This discrepancy in land area is mainly due to the fact that: 1) China has no accurate statistics about land area. The farmers tend to report less land than really exists to avoid paying government duties; this is more possible in hilly areas. 2) Some arable land could be used as a mulberry plantation or fishery area in the past decade. Nevertheless, She's report is likely to be more reliable because it was based on the national database and published officially.

Table 4.1 Land use in the Yangtze Delta a) 1993

| | Shanghai | S. Jiangsu | N. Zhejiang | Total |
|------------------------------------|----------|------------|-------------|---------|
| Total territory (km ²) | 6,341 | 41,788 | 26,248 | 74,377 |
| Arable land (%) | 50.1 | 46.5 | 21.2 | 37.9 |
| Arable land (1,000 ha) | 317.7 | 1,942.7 | 555.0 | 2,815.4 |
| Land under permanent crops (%) | 0.6 | 7.4 | 10.2 | 7.8 |
| Forest land (%0 | 0.7 | 5.1 | 44.0 | 18.5 |
| Water surface (%) | 32.6 | 26.9 | 8.7 | 21.0 |
| Constructed area & industry (%) | 12.8 | 9.7 | 5.6 | 8.5 |
| Roads etc. (%) | 3.2 | 4.0 | 10.0 | 6.0 |

¹ The SAAS's Yangtze Delta is bigger than Delta A, but much smaller than Delta B (see figure 2.3). The SAAS's definition includes only the suburban counties/districts of Shanghai Municipality, 13 counties/cities in three PLCs of Jiangsu, and ten counties/cities in three PLCs of Zhejiang.

a) Source: She Zhixiang (1997). The percentage after adjustment was recalculated by the author.

The SAAS study shows that in 1997 there were 5,104,200 agricultural labourers in this Delta, i.e. 650,200 in Shanghai, 1,598,800 in South Jiangsu and 2,855,200 in North Zhejiang¹. Since the population density in South Jiangsu is higher than that in North Zhejiang and their economic situation is similar, the above-mentioned figures might be under- or over-reported, i.e. too small for South Jiangsu and too large for North Zhejiang. This report is interesting in that it reveals that female workers play an essential role in agriculture in the Delta: there were 1,460,300 male and 3,643,900 female labourers, i.e. the male to female ratio was roughly 3:7. In the past, the majority of labourers were engaged in grain production, and part-time farms made up a considerable percentage. The majority (over 75%) of labourers were engaged in grain production and other land-intensive crops; only about 10% were engaged in the production of more profitable crops such as vegetables, melon and fruit.

The amount of arable land per capita was only about 0.04 ha, and the average amount of arable land per agricultural worker was about 0.32 ha. Land-intensive crops (e.g. grain, cotton, rape) dominated, while about 11% of workers were engaged in labour-intensive vegetable production (table 4.2). The share of workers involved in animal and horticultural production is constantly increasing in the Delta. They are mainly specialised households, but the data are not available in the SAAS study. In some counties/cities of the Delta (e.g. Wujiang), animal husbandry has not been separated from so-called diversified enterprises (including fishery, tree nurseries, silkworms, etc.). This seems to be a heritage of the old 'grain first' policy.

To sum up, the population density in the Delta is extraordinarily high, and very limited arable land per capita is a characteristic feature of this area. According to recent statistics (cf. tables 4.3, 4.4 and 4.5), very roughly, the total area of arable land in the Delta amounts to over 2.5 million ha; of this, circa 60% is in South Jiangsu, circa 30% is in North Zhejiang and circa 10% is in suburban Shanghai. If the number of workers actually engaged in crop farming is estimated at 3.6 million², then the amount of arable land per worker is between 0.6 and 0.7 ha. That size of farm, of course, is very small, and this situation will not change remarkably in the foreseeable future unless a major reform is carried out.

¹ Again, the SAAS's estimated number of labourers in Zhejiang might be too large. Population density in N. Zhejiang is less than in S. Jiangsu, and the share of rural workers in TVEs in both areas must be similar.

² The author has made some adjustments, based on tables 4.3, 4.4 and 4.5 estimated the number of 'workers actually employed in crop farming' at 600,000 for Shanghai, 1,600,000 for South Jiangsu, and 1,400,000 for North Zhejiang. Note that workers specialised mainly in animal husbandry and fishery have been excluded.

Table 4.2 *Land and labour use in agriculture in the Delta a) 1997*

| | Ha (1,000) | % | Labourers (1,000) | % |
|--------------------|------------|------|-------------------|------|
| Grain crops | 1,087.4 | 64.8 | | |
| Cotton | 138.5 | 8.3 | | 75.6 |
| Rape-seed | 112.8 | 6.7 | | |
| Vegetables & beans | 130.5 | 7.8 | 580 | 11.4 |
| Mulberry & tea | 143.4 | 8.3 | 495 | 9.7 |
| Other | 68.9 | 4.1 | 170 b) | 3.3 |

a) Source: SAAS (1999); b) Production of melon and fruits only

4.2 Traditional farm structure

The traditional farming pattern developed over a very long period of time. It is changing now, but more slowly than most socio-economic indicators in the Delta. Agriculture's share in the GNP is much smaller than the labour force employed in this sector. This implies that income from farming alone must be lower than that from other economic activities. TVEs have become the main source of income for a considerable proportion of farmers in the Delta. A typical farm in the Yangtze Delta can be described as follows:

- Farm management scale is very small, even in comparison with Japan. The typical size of a farm in the Delta is about 0.6 ha. Double-cropping and intercropping systems are the main way to increase the sowing acreage. The number of farms is not decreasing because migration is strictly controlled. The shift of rural labour is limited to TVEs (leaving the farm without leaving the countryside). Part-time farming is very popular, especially in the plain area with its numerous TVEs. Only a small proportion of horticultural farms (vegetables and flowers, usually in plastic tunnels) can be considered as specialised farms; however, even their scale is small. As a result of population growth, the shrinkage of farm size will continue for the foreseeable future.
- Labour-intensive farming is still dominant. In the past, usually family labour was capable of doing everything in crop farming. The number of part-time farmers is growing where TVEs are a major source of income. In the past, hired labour was rare, except when it took the form of mutual aid during the busy seasons (usually involving relatives or neighbours), but is now becoming more popular in areas where TVEs provide a stable income (hired labour comes mainly from neighbouring provinces, e.g. Anhui and Jiangxi).
- Self-sufficiency in most kinds of food (especially grain) was the main goal of production in the past, and farmer households are to a large extent dependent on their own products. As the total grain output has met the demand since the mid-1980s, the rural economy has become more market-oriented although the share of marketable commodities remains small. Specialisation (mainly in horticulture) is increasing, but is still not very common. As a rule, the import of food is controlled, while export is encouraged.
- Crop farming is far more important than livestock production. The output value of crops accounts for about 75% (excluding fisheries and forestry), and livestock accounts for only 25%. Within the animal sector, pig production is predominant, though poultry production is increasing rapidly. Milk production is limited mainly to the suburban areas of Shanghai. Therefore, per capita milk consumption remains very low: only a few litres a year on average and almost none in rural areas.
- Attempts have been made to enhance land productivity. The heavy use of fertilisers, pesticides and irrigation water is intended to increase the productivity of the land. One of the negative aspects of the heavy use of chemicals is the pollution of waters, including Taihu Lake and the groundwater. Machinery is used mainly for ploughing and harvesting. Few machines can be used for intercropping systems and other complicated farm works. Mechanisation is developing rather quickly, but at a high cost because of small size of farms.

4.3 The HRS and contract system

Since 1979, under the policy of reform and opening up to the outside world, a new management system has been adopted in rural China: the household responsibility system (HRS). The key points of this are:

- The natural village (or collective) is the landowner. The land is divided into many small plots, which are contracted out to every household in the village on the principles of openness, fairness and equality, according to the land quality and the number of labourers in a household.
- The farm household as the production unit signs a contract with the collective. The output target is determined in the contract according to the average yield of the locality in recent years. The contractor is obliged to fulfil the 'delivery task'¹ at state-fixed prices, pay agricultural tax to the state and deductions to the collective (as a collective accumulation fund for public purposes, such as schools, roads, etc.). The amount of the payment is predetermined in the contract.
- Having the right to use the land plots for agricultural purposes, the farmer has the responsibility to produce the amount of grain fixed in the contract. When he has met his target successfully (which, normally, is not difficult) and paid the tax and deductions, he has the right to dispose of his surplus (i.e. above-target) product. He can decide what to produce and where to sell/how to use the surplus grain (e.g. use it as animal feed or sell it at the market). For the same reason, he can use the land to grow vegetables and then sell them.

The last point is considered the essence of the system, because the 'big pot' (egalitarianism) has been broken. A farmer's individual effort can be established by his performance during the year. The diagram below assumes that the village has two farm households (A and B), which have the same amount of land, hence same state and collective duties (figure 4.1). The remainder (which can be sold at the market) depends on the farmers' physical inputs, efforts and management skill during the growing season. As farmer A has a much larger surplus than farmer B, the former enjoys a higher income.

Grain output grew dramatically in the five years following the introduction of the HRS in 1979. The great changes in rural China were described as a miracle, and most analysts attribute it to the HRS system. The system has created a strong incentive for farmers to produce more, something which was beyond people's expectations.

To reassure farmers about the policy's stability, a resolution was adopted at the 3rd Plenary Session of the Party's 15th Central Committee (1998), i.e. to prolong the period of land contract for a further 30 years. This means that farmers will have the land-use right for at least another 30 years.

¹ Grain shortage was a major concern of the Chinese government in the early 1980s. Then the farmers were obliged to fulfil the task of selling grain (in some parts of China, also cotton or oil-seeds) to the state (i.e. state-designated companies) at fixed purchase prices, which were usually lower than those at free market. Some areas pay the agricultural tax in kind (grain) rather than money.

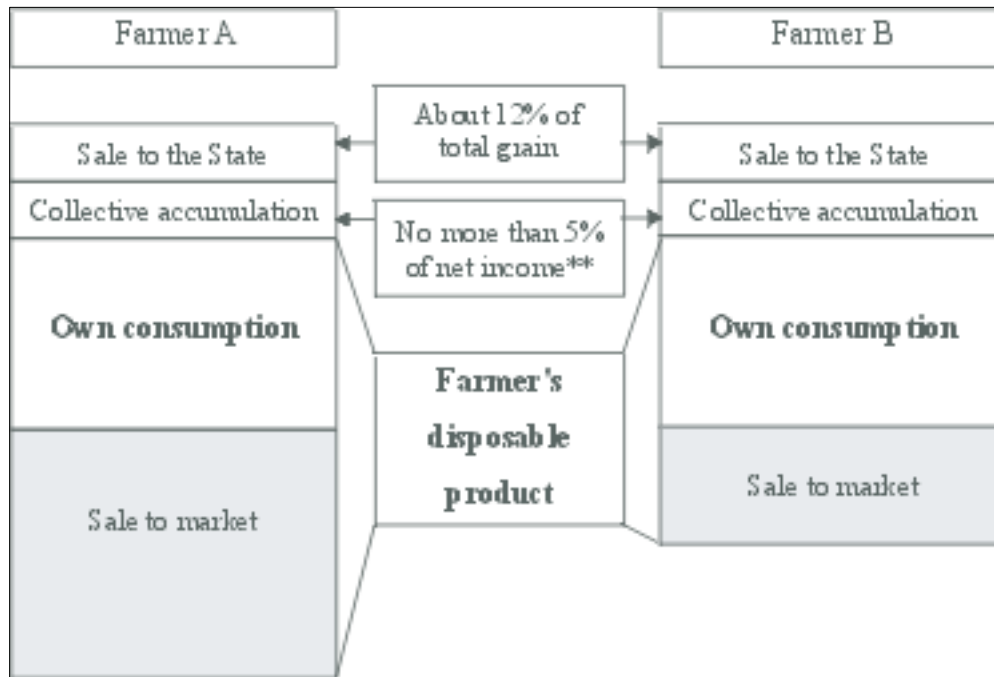


Figure 4.1 Incentive from the HRS in rural China (early 1980s)

a) This amount accounted for about 12% of total output, including agricultural tax (use of the land) and the fixed purchase quota at the state-set price (based on the average output during the previous five years). This norm does not change if the total output increases; b) This is the collective deduction for the village's public purposes. It is also based on net income over the previous five years

This decision to prolong the land-use right has both positive and negative impacts (according to some economists) on agricultural development. The positive aspect is that it encourages investment in land, and the improvement of land quality and the infrastructure (irrigation and drainage system). The negative aspect is that it hampers land transfer and thus the enlargement of farm size. The land still belongs to all members of the collective. It is more common for farmers to transfer their land-use right on the basis of a voluntary agreement, as many farmers want to earn more from non-farming businesses.

The grain supply situation underwent a dramatic change especially in 1997, when the grain shortage became a structural surplus of grain (a surplus of low-quality grain, but a shortage of high-quality grain). The word structural is used to emphasise its transitional character. Because the supply exceeded demand, the government price (i.e. the protective price) for grains (mainly rice, wheat and maize) became relatively high, at least higher than that on the free market. The quantity of grain that must be sold to the state changed its original character, too.

Since the 1960s, some of the rural communities in the Yangtze Delta have accumulated

a considerable quantity of collective fixed assets (machinery, factories, buildings, etc.). A version of HRS in the Yangtze Delta - viz. a two-tier management system (i.e. individual farm households integrated with some unified, collective operations, e.g. machinery-ploughing, irrigation, spraying pesticides) - has produced positive results, especially in that farmers now use machinery more reasonably and have increased labour productivity. Some wealthy (i.e. economically-viable) villages in Shanghai and South Jiangsu prefer to retain collective ownership as the basic form. Collective ownership has lost the importance it had in the years of the People's Commune, although some TVEs are still run by collectives and wealthy villages have more possibilities to provide different kinds of services.

4.4 Crop production

The soil in the Yangtze Delta is fertile and the climate permits several crops to be grown each year. As one of the most important agricultural regions, the Delta has always been a traditional crop-farming area. In particular, South Jiangsu with its fertile soil around Taihu Lake is an important grain exporter.

At the end of 1994, Lester Brown's essay ¹ predicted that China would import more than 200 million tons of grain by 2030, which panicked many economists throughout the world. Both the Chinese government and various agricultural economists were uncertain about the future development of world grain supply. A policy was adopted in 1995 to urge provincial governors to guarantee grain supplies in their province; this was called the governor's responsibility system (GSP). This was intended to encourage farmers to make major efforts to increase grain production in every province despite the prevailing conditions. The land-deficit regions lacked a comparative advantage to produce grain, and this trend worsened under the GSP. This had a negative impact on grain producers' income especially in the hilly south-eastern provinces, e.g. Zhejiang, Fujian and Guangdong.

This situation had changed by late 1997, when China began to face a new environment of a buyer's market for or a structural surplus of many agricultural goods for the first time in its history. Most of state-owned granaries were full. These companies were in a difficult financial situation as the maintenance cost was growing. Recently, the main emphasis has been put on increasing farmers' income by restructuring and diversifying the agricultural economy. Farmers now have more choice in their production plan.

The government has relaxed agricultural policies. Farmers are willing to shift to any products so long as these new products have prospects in the market. Of course, this has many transitory features, mainly due to the fact that the people's food problems have basically been solved, especially now the Chinese economy is becoming more open and more

¹ Brown, Lester, R.: Who Will Feed China, in Starke, Lind (ed.): *The Worldwatch Environmental Alert Series*, W. W. Norton & Company, 1995. His first essay appeared earlier (November 1994).

market-oriented.

The general features of crop production in Shanghai, South Jiangsu and North Zhejiang are shown in tables 4.3, 4.4 and 4.5, respectively. The exports do not include any interprovincial outgoing commodities, and the difference between the total arable land and the sown (or harvested) area is due to the double-cropping system, i.e. several crops a year on the same field. Some detailed figures were not available in the yearbooks of Jiangsu and Zhejiang, so interprovincial comparisons are difficult.

Table 4.3 Crop production in Shanghai Municipality, 1996-1999

| | 1996 | 1999 |
|--------------------------------------|---------|---------|
| Arable land (ha) | 293,814 | 293,814 |
| Rural labour in agr. (1,000) | 665 | -- |
| GOVA (million yuan) | 20,675 | 20,690 |
| Crop farming | 8,909 | 8,786 |
| Share, % | 43.1 | 42.5 |
| Direct export products (USD million) | 314.24 | 486.35 |
| Area of grain and soybean (1,000 ha) | 352.5 | 335.0 |
| Output (1,000 t) | 2,379 | 2,082 |
| Yield (kg/ha) | 6,031 | 6,215 |
| Vegetable area (1,000 ha) | 107.1 | 110.7 |
| Output (1,000 t) | 301,580 | 336,970 |
| Melon area (ha) | 13,979 | 16,554 |
| Output (1,000 t) | 4,234 | 3,398 |
| Total fertiliser used (1,000 t) | 852.4 | 875.3 |
| Fertiliser used (kg/ha) | 2,901 | 3,009 |
| Total pesticide used (1,000 t) | 14.6 | 13.8 |

Source: Statistical Yearbook of Shanghai, 2000.

Grain production is a land-intensive enterprise; it is not efficient on small-scale farms. The small farms in China - especially those in the Yangtze Delta - have been in an unfavourable position to manage grain crop production, mainly because of their tiny scale. That

inevitably limits potential production capacity of the grain growers.

The following example illustrates this situation. A farmer has half a hectare and grows only grain crop. He grows twice a year - wheat plus late rice, which is common in the Delta. The crop yield is high, typically 6 tons for wheat and 7.5 tons per ha for rice in suburban Shanghai. Hence this hard-working farmer can harvest a total of 6.75 tons of grain, which means that he receives at best 9,675 yuan (USD 1,170) a year. If he has a four-person household, per capita income is only 2,420 yuan (gross income). Excluding the production cost (which is quite high; see table 4.3), his per capita net income would be about 2,000 yuan. In fact, per capita net income in Shanghai's suburban area was about 5,400 yuan in 1999 (see table 3.4).

The above case is optimal (i.e. no natural disasters or other unexpected costs). One must take into account that it is sufficient for a household to spend 50-60 workdays performing all the fieldwork on a half-ha plot, given the current techniques and available services. This can be compared to a factory that closes down for 10 months a year - and that is the crux of the problem. One cannot expect a worker to earn a lot of money while working only 1/6 of a year in a factory. How can a farmer work a full a year without involuntarily spending 'idle' time?

Table 4.4 *Crop production in South Jiangsu, 1999*

| | Suzhou | Wuxi | Changzhou |
|------------------------------|--------|-------|-----------|
| Land area (km ²) | 8,488 | 4,650 | 4,375 |
| Irrigated land (1,000 ha) | 304 | 169 | 361 |
| Harvested area (1,000 ha) | 533 | 286 | 316 |
| Rural labour in agr. (1,000) | 665.9 | 512.6 | 535.3 |
| GOVA (million yuan) | 16,470 | 8,783 | 8,367 |
| Of crop farming | 10,124 | 5,431 | 5,060 |
| Share (%) | 61.5 | 61.8 | 60.5 |
| Output of grain (1,000 t) | 2,258 | 1,449 | 1,548 |

Source: Jiangsu Statistical Yearbook, 2000.

Table 4.5 *Crop production in North Zhejiang, 1999*

| | Hangzhou | Jiaxing | Huzhou |
|------------------------------|----------|---------|--------|
| Arable land area (1,000 ha) | 190 | 208 | 130 |
| Paddy fields (1,000 ha) | 164 | 176 | 117 |
| Rural labour in agr. (1,000) | 1,048 | 556 | 483 |
| GOVA (million yuan) | 14,147 | 8,322 | 7,935 |
| Of crop farming | 8,767 | 4,973 | 4,623 |
| Share (%) | 62.0 | 59.8 | 58.3 |
| Grain crops (1,000 ha) | 340 | 285 | 204 |
| Output of grain (1,000 t) | 1,695 | 1,696 | 1,165 |

Source: Zhejiang Statistical Yearbook, 2000.

The common way is to find a job in a TVE. Actually, crop farming has become a

part-time occupation in densely-populated regions, particularly in the Yangtze Delta. A way out of this situation is to let some farmers have more land plots through re-contracts with the villagers, so that grain growers have at least to 10 ha or more. Another way is to develop labour-intensive, high-value products, such as flowers and vegetables.

Vegetable production is important because the mayor is also responsible for the basket products. The suburban areas are good production bases, but face competition from neighbouring provinces. Production costs in other areas are lower than in Shanghai, especially if the vegetables are grown in glasshouses or plastic tunnels. Possibly, the Shanghai farmers have some advantages in terms of varieties and the vicinity of the supply chain. The major disadvantage is the soil pollution caused by the overuse of fertilisers and pesticides, and by water discharged by industries.

Flower production is a new, profitable business. The area under flowers in the Delta is expanding, but there are no official statistics. According to flower business association, China's fresh flower business has increased twenty-fold in terms of sales value in less than 10 years, i.e. from about 600 million yuan in 1990 to 10.5 billion yuan (circa USD 1.27 billion) in 1998. Still, the flower wholesale market is only at an early stage of development and the sales volume is relatively small. The average per capita consumption of cut flowers in Shanghai remains quite low, i.e. at about 0.5% of that in developed countries.

Because the nearby cities have millions of relatively wealthy people, the market prospects for these commodities are bright. In 1997, the Yangtze Delta area produced 8.23 million tons of vegetables and 331,000 tons of fruits and melons. The per ha yields were 70.7 tons for vegetables and 10.9 tons for melons. A rural worker on average sold 1,610 kg of vegetables and 65 kg of melons (SAAS).

There is another possibility for small-scale farms: to raise pigs, chicken, dairy cows and so on rather than remaining in crop production. These are also more time- and labour-demanding enterprises, and thus correspond to the comparative advantage from a theoretical point of view.

4.5 Livestock production

Animal husbandry is considered one of the most effective ways to support crop production, because farmyard manure is essential to improve soil fertility. However, animal production did not become a pillar of the rural economy until the 1980s. There were many reasons for this. One factor was the severe shortage of grain supplies that arose in the early 1960s. After that, grain production had priority on the government's agenda and became a political task. Whereas Mao Zedong summarised 12 aspects of crop farming¹, he emphasised pig pro-

¹ These were: grain crops, cotton, oil crops, hemp, silk, tea, sugar crops, vegetables, tobacco, fruits, medical herbs, and miscellaneous others.

duction only because of its importance as a source of manure for crop production.

The rapid development of livestock production occurred after the 1980s; especially pig and poultry production underwent unprecedented growth. The most impressive was the increase in meat production (table 4.6). There are three reasons for this: 1) the government began to pay more attention to increasing basket products in order to enrich the market as urban incomes grew much faster; 2) the rural policy became more flexible and more market-oriented, and livestock production is more profitable than grain in many regions; and 3) the continuous growth of grain output ensured the steady growth of feed supplies.

Table 4.6 Output of livestock products in China, 1985-99 (1,000 tons)

| | Meat | Pork a) | Eggs | Milk |
|------|--------|---------|--------|-------|
| 1985 | 19,265 | 16,547 | 5,347 | 2,894 |
| 1991 | 31,444 | 24,523 | 9,220 | 5,243 |
| 1996 | 45,954 | 31,580 | 19,652 | 7,358 |
| 1997 | 52,688 | 35,963 | 18,953 | 6,811 |
| 1998 | 57,238 | 38,837 | 20,185 | 7,445 |
| 1999 | 59,490 | 40,056 | 21,347 | 8,069 |

a) Pork is reported separately

Source: China Statistical Yearbook, 1996 and 2000.

In 1999, China's meat output exceeded 59 million tons, which resulted in a much larger share of livestock in the total agricultural output value (almost 30%). The diet of the Chinese has been considerably improved. The per capita production of meat and eggs is above world average and amongst the highest in Asia (in 1999, 47 kg of meat and 17 kg of eggs). The big difference concerns dairy products. Milk output was negligible and was not reported in Chinese statistics until 1986. The total output of cow milk was 8 million tons in 1999, accounting for less than 2% of the world total, and only about 60% of the Dutch and 55% of the Californian output. Historically, dairy farming has played a negligible role in the rural economy.

According to FAO data, the average amount of milk per capita world-wide was 81 kg in 1997, while that in China was less than 6 kg. Japan's per capita milk availability was only 4.4 kg in 1950; it went up to 45 kg in 1970, and to 69 kg in 1997. In South Korea, it was 3.7 kg in 1970, but rose to 45.3 kg in 1997. In the period between 1970 and 1997, the per person output in Israel increased from 150 kg to 197 kg.

China lags far behind the remarkable increases of milk output in Japan. It is difficult to explain this slow growth of dairy production, although output has increased considerably in recent years. Milk production per capita was below the national average (6 kg) in 18 provinces in 1999, and less than 1 kg in five provinces and in Guangxi Autonomous Region (table 4.7). Milk output data were not available for South Jiangsu, probably because there was too little to be included (see table 4.9). The larger producers are located in the western and north-eastern regions of China.

Table 4.7 Per capita milk production in China, by province a) (kg), 1999

| Province | Kg | Province | Kg |
|----------------|------|--|-------------|
| Tibet | 84.5 | Hebei | 12.2 |
| Xinjiang | 41.0 | Shanxi | 10.5 |
| Qinghai | 39.7 | Shandong | 7.1 |
| Heilongjiang | 39.1 | Jilin, Gansu | 5.6 |
| Ningxia | 38.8 | Liaoning | 5.0 |
| Inner Mongolia | 30.9 | Sichuan | 3.2 |
| Beijing | 19.7 | Yunnan | 3.0 |
| Shanghai | 18.0 | Fujian, Jiangsu, Zhejiang, Jiangxi, Henan, Chongqing, Guangdong | Less than 3 |
| Shaanxi | 15.8 | Other 6 provinces/region | Less than 1 |
| Tianjin | 13.7 | China | 6.4 |

a) Including all Autonomous Regions and municipalities. Data for Taiwan and Hong Kong are not available
Source: China Statistical Yearbook, 2000.

It is interesting to note that dairy output was below the level of Beijing in the suburban area of Shanghai Municipality. Thanks to Western influence, which began in the 19th century, Shanghai has a longer history of milk production and consumption. The strong industrial base, higher per capita income and denser population in the Delta are good conditions to facilitate milk collection, processing and distribution and reduce the cost. According to a report written in 1998, there were 596 pig farms with over 1,000 heads in Shanghai's suburban area, and only 146 dairy farms with more than 100 cows.

It seems that milk must be in short supply in Shanghai if the consumer's behaviour is

similar to that of Beijingers. This large city (population 14 million) must find a new way to meet the people's demand (see section 6.6).

There are 5,000 livestock farms in the Yangtze Delta mainly, raising poultry, pigs, cattle and sheep. These farms (or companies) are mostly family operations and their scale is small. But the dairy farms and companies virtually belong to the state. The overall situation of the animal husbandry in Shanghai, South Jiangsu and North Zhejiang is shown in tables 4.8, 4.9 and 4.10, respectively.

From these tables it can be seen that even today livestock production has a relatively small share in South Jiangsu and North Zhejiang (14 - 24% of GOVA), while the national average is about 30%. Jiaxing is an exception, probably because the city neighbours Shanghai and has a good market share there.

Table 4.8 Animal husbandry in Shanghai Municipality, 1998-99

| | 1998 | 1999 |
|--------------------------|--------|--------|
| GOVA (million yuan) | 20,675 | 20,690 |
| Animal husbandry | 8,727 | 8,635 |
| Animal's share (%) | 42.2 | 41.7 |
| Output of pork (1,000 t) | 236.7 | 258.5 |
| Poultry (million birds) | 162.3 | 158.4 |
| Eggs (1,000 t) | 199.8 | 144.5 |
| Milk (1,000 t) | 246.1 | 259.5 |
| Dairy cows (1,000 heads) | 58.0 | 55.7 |

Source: Shanghai Statistics Yearbook, 1999, 2000.

Table 4.9 Animal husbandry in South Jiangsu, 1999

| | Suzhou | Wuxi | Changzhou |
|---------------------|--------|-------|-----------|
| GOVA (million yuan) | 16,470 | 8,784 | 8,367 |

| | | | |
|--------------------------|-------|-------|-------|
| Animal husbandry | 2,247 | 2,111 | 1,260 |
| Animal's share (%) | 13.6 | 24.0 | 15.1 |
| Output of meat (1,000 t) | 141.6 | 120.0 | 89.3 |
| Output of eggs (1,000 t) | 34.6 | 23.1 | 18.4 |
| Output of fish (1,000 t) | 294.4 | 90.9 | 109.2 |

Source: Jiangsu Statistical Yearbook, 2000. Data for milk were not available.

Table 4.10 *Animal husbandry in North Zhejiang, 1999*

| | Hangzhou | Jiaxing | Huzhou |
|--------------------------|----------|---------|--------|
| GOVA (million yuan) | 14,147 | 8,322 | 7,935 |
| Animal husbandry | 2,935 | 2,534 | 1,278 |
| Animal's share (%) | 20.7 | 30.4 | 16.1 |
| Output of meat (1,000 t) | 230.9 | 172.6 | 80.6 |
| Output of eggs (1,000 t) | 56.7 | 24.6 | 22.5 |
| Milk (1,000 t) | 38.6 | 1.3 | 0.4 |
| Output of fish (1,000 t) | 86.5 | 89.8 | 125.0 |

Source: Zhejiang Statistical Yearbook, 2000.

As mentioned, the Delta region has been called the 'land of fish and rice'. Fish is one of the most important sources of protein for the local people. Zhejiang is the third largest fish-producing province in China (mainly marine fishing), but Jiangsu provides mostly fresh-water fish and other aquatic products.

4.6 Agricultural investment

Agricultural input may be public (capital investment) or come from individual farmers in order to increase their own profit.

Capital investment in agriculture refers mainly to the public funding of agricultural development, e.g. water management and irrigation projects, land reclamation, nature management, research and extension work, etc. Major capital investment projects must be approved by the government or even the National People's Congress (parliament), and they receive guaranteed financial support from the government (from the national level to county level, according to the beneficiary areas and/or importance). The state (including the county level) is responsible for the management of these projects. All the farmers in the beneficiary area can use the public facilities, and only have to pay the running cost. The central government's current policy is to support socio-economic development in the west, and so most of the capital flow goes to the central and western parts of the country (e.g. the well-known Three Gorge Hydraulic Project).

The relatively wealthy Yangtze Delta is not on the priority list, with the exception of

the Taihu Lake water management system (also because of water pollution). A study (SAAS, 1999) indicates that in 1997, total capital investment in agriculture in the Yangtze Delta amounted to 41,337 million yuan, or 24,600 yuan per ha on average. The relatively high level of investment (compared to other provinces) has been arranged by planning on the agenda of the local governments, and not by pursuing high profitability of production. It is suggested that this should be understood from the angle of the earlier planned economy. The total capital agricultural investment in Shanghai in 1997 was about 13,230 million yuan. On a per ha basis, 47,100 yuan were invested in cropland, which was 22,500 yuan more than the Delta's average in 1997. The figures for South Jiangsu and North Zhejiang were 16,547 million and 11,560 million yuan, respectively (table 4.11).

Individual input to farming is becoming more important in the Delta. The financial system in rural China, however, is rather underdeveloped and farmers have difficulties in obtaining credit. The interest rate for farmers is normal, but they often prefer to borrow money from relatives or neighbours. Shanghai's farmers borrowed more money from the bank, but the credit amounted to only 7.2% of their own savings. There are many reasons for this, e.g. the very small scale of farm management (hence small profit linked to high risk of debt), no farm capital or assets can be used as collateral for a mortgage, and the complicated credit procedures.

Farmers buy all the agricultural inputs for their production (i.e. current costs), such as seeds, stock animals, fertilisers and pesticides, machinery, etc., for their own use, but there are some public investments, mainly for technical extension etc.

The total power capacity of farm machinery in the Delta has reached a high level of mechanisation, even though the scale of farming is very small. The machinery includes large and medium-sized tractors, trucks for farm use, water pumps for irrigation and drainage, combines, motorised sprayers, and grain-drying machines. The tractor-ploughed area was 991,200 ha in 1997, or about 59.1% of the total amount of arable land. The effective pump-irrigated and drained area was 1,418,700 ha, accounting for 84.6% of the total.

Table 4.11 *Input levels in the Yangtze Delta, 1997*

| | Shanghai | S. Jiangsu | N. Zhejiang |
|--------------------------------------|----------|------------|-------------|
| Total agr. investment (million yuan) | 13,230 | 16,547 | 11,560 |
| Source: From government budget | 275 | 142 | 123 |
| Farmer's input (A) | 12,079 | 15,864 | 10,920 |
| From bank loan (B) | 866 | 541 | 517 |
| Ratio (B) to (A) | 7.2 | 3.4 | 4.7 |

| | | | |
|--|---------|---------|---------|
| Per ha of cropland (yuan) | 47,100 | 21,900 | 18,300 |
| Per agr. worker (yuan) | 20,300 | 10,400 | 4,100 |
| Farm machinery (1,000 kW) | 1,610.4 | 2,652.4 | 2,299.6 |
| Per ha (kW) | 5.73 | 3.51 | 3.54 |
| Per agr. worker (kW) | 2.84 | 1.66 | 0.78 |
| Tractor-ploughed area (1,000 ha) | 200.4 | 423.3 | 365.5 |
| Share of total cropland | 72% | 56% | 58% |
| Irrigated and/or drained area (1,000 ha) | 255.7 | 627.3 | 535.7 |
| Share of total cropland | 91% | 83% | 85% |

Source: SAAS, 1999. 1 US dollar was about 8.28 RMB yuan.

The above data show that, in general, Shanghai was first as regards agricultural investment, followed by South Jiangsu and then North Zhejiang. Many people suggest that the problem now is to reduce the application of chemicals and to make more efforts to protect the environment, including Taihu Lake and the Yangtze River.

4.7 Agricultural productivity and GOVA

China is now the biggest producer of major agricultural products. It ranks first in the output of grain, meat, eggs, vegetables and many other products. The country has successfully increased its land productivity by making intensive use of double-cropping and intercropping systems and its cheap labour force. It has made great progress in ensuring food security for its billion-plus people.

On the whole, the Yangtze Delta comes first as regards agricultural investment, which is far above the national level. In 1997, for example, the average rural labourer in the Delta brought to market 180 kg of pork and 57 kg of poultry meat, about 10 kg of beef and/or mutton, 85 kg of milk and 81 kg of eggs. Compared to its economic position within China, however, the productivity of an agricultural worker in the Delta is not high enough. The shares of commercial sales are small even in the Yangtze Delta. This is a result of the old self-sufficiency policy.

To measure labour productivity in agriculture, value added per agricultural worker is used in World Bank statistics for all countries in the world (table 4.12). The ERS-USDA (1993), using the FAO approach and international dollars, estimates land and labour productivity (table 4.13). The figures in two tables are not comparable for some indicators, especially those in table 4.13 related only to crop production. Nevertheless, one can see the huge gaps between China and the developed countries ¹.

Table 4.12 World Bank estimates: agricultural labour productivity - value added per worker, selected countries (in 1995 USD)

| | 1979-81 | 1996-98 |
|-------------|---------|---------|
| China | 161 | 307 |
| India | 275 | 406 |
| Korea, R. | 3,745 | 11,760 |
| Japan | 15,655 | 30,272 |
| France | 14,956 | 36,889 |
| Denmark | 21,321 | 46,621 |
| Netherlands | 21,663 | 43,836 |
| USA | n.a. | 39,523 |

¹ Land productivity has been always been emphasised in China and ranks among the highest in the world, but its labour productivity was far below the world average due to large amount of surplus labour.

Source: World Bank: 2000 World Development Indicators. Table 3.3; figures in italics are for 1995-1997, from World Development Report, 1999-2000, table 3.4.

While land productivity in China ranked among the highest in the world, the country's labour productivity was far below the world average. A Chinese agricultural labourer produced a farm value of only 422 international dollars, while the Netherlands and Denmark exceeded 40,000 international dollars.

The gross output value of agriculture (GOVA) is normally used in Chinese statistics instead of agricultural GDP, or value added in agriculture. GOVA refers to the total volume of products of farming in value terms, which reflects the total scale and total result of agricultural production during a given period of time. The total value is obtained by multiplying the output of each product or by-product by its price, resulting in the output value of each single item. It is larger than the agricultural GDP.

Table 4.13 USDA estimates: land & labour productivity, selected countries, 1971 & 1991 (in international dollars, 1979-81 average)

| | Crop production per hectare | | Agr. production per agr. worker | |
|-------------|-----------------------------|-------|---------------------------------|--------|
| | 1970 | 1991 | 1970 | 1991 |
| China | 694 | 1,422 | 253 | 422 |
| India | 302 | 500 | 370 | 493 |
| Korea, R. | 1,120 | 2,011 | 595 | 1,391 |
| Japan | 1,606 | 1,711 | 1,390 | 4,547 |
| France | 653 | 892 | 9,065 | 26,331 |
| Denmark | 404 | 756 | 14,226 | 42,147 |
| Netherlands | 1,938 | 2,468 | 18,847 | 44,339 |
| USA | 265 | 410 | 27,754 | 51,561 |

Source: USDA: World Agriculture, Trends and Indicators, 1970-91. ERS, 1993.

The GOVA per agricultural worker is a useful indicator to compare inter-regional difference in labour productivity in China. It can be adopted as a substitute to avoid some price distortions for individual commodities. A study made by the SAAS reported the GOVA and agricultural GDP of Shanghai, South Jiangsu and North Zhejiang. Its estimates are given in table 4.14 ¹.

¹ As more detailed data are not available from the SSB statistics, Table 4.14 can be used to look at the agricultural performance in the Yangtze Delta. Please note the difference between the figures shown in tables 3.4 and 4.14 on the one hand, and tables 4.12 and 4.13 on the other. The gross output value covers a wider range of products and hence is not very comparable.

Table 4.14 *Labour productivity in the Delta, measured with GOVA, 1997 (in RMB yuan and dollars)*

| | Shanghai | S. Jiangsu | N. Zhejiang | The Delta |
|----------------|----------|------------|-------------|-----------|
| GOVA | 38,100 | 20,200 | 8,800 | 16,100 |
| Equivalent USD | 4,607 | 2,442 | 1,064 | 1,947 |
| Agr. GDP | 21,500 | 10,100 | 4,600 | 8,400 |
| Equivalent USD | 2,600 | 1,221 | 556 | 1,016 |

Source: SAAS.

4.8 Factors affecting labour productivity

As stated, Chinese agriculture is characterised by relatively high land productivity and very low labour productivity. The international literature might have major distortions; it is especially difficult for the authors to accurately estimate the input of labour (there are a lot of part-time workers). However, the growth rate of labour productivity is low due to limited outlets for the rural surplus labour and retarded urbanisation. The same picture can be seen also in the Yangtze Delta.

The Chinese government has always been concerned about grain production and stable food supplies for its 1.25 billion people, especially the urban residents. This has deep-rooted and historical reasons. Famines and hungers during China's thousands of years of history serve as good examples of the importance of feeding people adequately; without sufficient food grain, the country's rulers were faced with the threat of peasant uprisings. Grains are easy to collect and can be stored for some years. In old China, more grain meant more wealth.

The 'grain first' policy was adopted in the early 1950s. Mao Zedong promoted the slogan 'Take grain as the key in agriculture' in 1958, and called for the raising of pigs in order to provide more manure to increase grain output. To ensure urban food supplies and raw materials for state-owned enterprises, the government set a discriminatory price system for agricultural goods. This price policy was adopted along with the grain-quota rationing system in the early 1950s, and lasted for about four decades. Even now, policymakers repeatedly emphasise the importance of grain production at every meeting or conference about rural work and agriculture.

There are many factors behind the slow growth of labour productivity. Some have a deep historical and social background, which cannot easily be eliminated. These factors are

mainly:

- Self-sufficiency tradition. Because people had such small farms, they put few products on the market. The primary goal of production was to meet their own needs. In a closed economy, it was deemed a shame if a county or province was unable to produce enough food grain for own consumption and had to import grain from other places, especially from abroad.
- Difficulties enlarging farm scale. There were virtually no possibilities for rural residents to find jobs in the urban area before the reform, so the surplus labour had to remain in small-scale land farming. Of course, this was a result of limited land resources and their unwise use. Very small-scale household farms (less than 0.5 ha) are predominant, especially in the Yangtze Delta. Recent booming rural industries and residential construction (to some extent, road construction) have taken over a considerable part of the land.
- Lack of effective workdays. Their low income is due to the short period of effective work in cropland farming in general. It is estimated that the effective time spent on grain farming amounts to 50 days, as explained in section 4.4.
- Low educational level of peasants. A low level of education often means fewer non-agricultural jobs. The situation has been worsened due to the outflow of the better-educated younger generation to TVEs. Those who remain in the villages are non-skilled old and women, who have become the pillars of agricultural production. They have to take care of crops and animals. They mainly use traditional technologies and are slow to adopt - or have difficulties adopting - new ones. TVEs create the majority of the income of the Delta's families. Farming often becomes a part-time job. Capital always goes to the most profitable business, while grain farming is one of the least profitable in the Delta. Therefore, funds accumulated in the Delta go first to TVEs. Only small sums are used for the introduction of new varieties or technologies, which requires more skill or knowledge and is sometimes risky.
- Lack of public funds to support technology. A very small percentage of public funding is allocated to R&D in China, and particularly to agricultural R&D. As estimated by CGIAR ¹ a decade ago, and later confirmed by some domestic sources, China's public funding of agricultural R&D was only 0.3% (or less in many areas) of agricultural GDP, much less than that of all developing countries as a whole (about 1%). The situation should be better in the Yangtze Delta, but the data are not available.

The above are some of the numerous factors limiting the growth of agricultural productivity. They tend to have a long-term influence. Among the other important factors are institutions and policies. Institutional factors can change over time. Some have positive and

¹ CGIAR - the Consultative Group on International Agricultural Research, an international association, under which there are 16 research institutes (located in different countries).

some have negative effects. Some have only a short-term effect - e.g. an increase of the state purchase price - whereas some last longer, e.g. the nation-wide introduction of HRS took only a couple of years and increased labour productivity effectively and almost immediately (though it has been less evident since 1984). Wrong policy proved disastrous during certain periods in China, e.g. the Commune Movement and the Great Leap Forward of the late 1950s, which depressed productivity, similar to a war. The first thing is for policymakers to change their fixed points of view. In the new situation, the land and property rights system, research and extension system, and the efficient governmental service system are more important. Other problems will be easier to solve as the market economy becomes firmly established and farmers have more freedom in their decision-making regarding production and land re-contracting.

Two cases have been reported as recent institutional innovations in Zhejiang. The first is that Zhejiang Province concluded contracts with some main grain-producing provinces (Jilin, Hubei, Jiangxi and others) about grain purchases. This was considered a signal to 'marketise' the grain purchase system. Zhejiang has opened its market to other provinces, and grain-producing provinces (which have suffered badly over the few years from the low price of surplus grain and the slow growth of farmers' income) can benefit from guaranteed buyers.

Another case is the emergence of a land transfer information centre, which links two kinds of farmers in terms of the exchange of land-use rights: it helps those who prefer to stop cropping on their land (but will not give up their use-right) to find a partner who wants to enlarge his farm, and it helps those who are eager to enlarge their farm but do not know how to find those who want to give up their land-use right. Should this experiment be successful and the transfer of land-use rights continue, the required enlargement of farm scale in China will become a reality, also in the Yangtze Delta.

5. The Rural vs. Urban, TVEs and State Farms

5.1 Two socio-economic systems in China

China was devastated by the post-1930s wars. The newly-founded republic was isolated from the international powers, that is, except from her 'elder brother' - the Soviet Union. The country needed a huge amount of funds to reconstruct its economy. China's population was approaching 500 million. Rural residents dominated this huge country, and they had an even lower income than the urban inhabitants.

China had to rely on own efforts to industrialise its economy, mainly by using the people's savings. China's industrial development followed the Soviet path in putting heavy industry (i.e. metallurgy, machine tool industry, mining, etc.) as the central task. Typically, heavy industry requires huge capital investments, but less labour compared to light industry, such as textile, food processing, etc. To accumulate capital, China had to deprive especially rural people of a part of their income, just as the Soviet Union had done in the 1930s (peasants are scattered and less organised). This was mainly realised with so-called price scissors, which reduced the purchasing price of farm produce while raising the price of manufactured goods.

The policymakers believed that the majority of the peasantry should stay in the countryside in order to prevent the rapid expansion of cities. This was based on a good reason: fewer urban inhabitants require fewer commercial foods. Agriculture - which was weak and poorly-equipped with modern technologies - could meet only the basic demands of a limited number of urban consumers. This was the main reason to separate the rural from the urban population in the early 1950s.

The implementation of the household registration system in 1958 officially prevented migration from rural to urban areas. The demarcation between urban and rural then became more clear-cut. Many welfare benefits are available only to urban citizens (some examples are given in figure 5.1). Basically, these barriers to migration remain, with only limited changes.

The 1997 reform has given rural residents much more freedom to move to the city. This became possible especially due to improved food supplies. Food ration coupons finally lost their reason for existence. Migration increased in both scale and speed in the late 1980s. It is estimated that over 50 million rural workers have moved to an urban area since then; in particular, tens of thousands of construction teams in cities are mainly recruited from rural

areas as cheap labour. Rural children, however, can rarely enter well-equipped urban schools to enjoy better education, even if they live with their parents in an urban area.

| | Rural area | Urban area |
|---|---|--|
| Food grains and vegetable oil | Self-sufficient | Guaranteed supply, with different kind of ration coupons |
| Housing | Constructed with own savings | Rented public apartments (low cost) |
| Electricity | No - even in some small towns | Almost all households |
| Fuel | Woods, straw and grass; coal not guaranteed | Coal guaranteed, gas in big cities |
| Transportation | Poor roads, especially in mountainous areas | Relatively good, commuter is subsidised |
| Schools | Poor | Better |
| Teachers | Usually low qualifications; some are paid by the farmers | Higher qualifications; paid by the state |
| Cultural life | Mainly traditional recreation | Much more colourful |
| Radio and TV | Coverage increasing | Almost all families now |
| Medical services | Paid by patients themselves | Free for government staff and workers, or a small part paid |
| Employment, unemployment or in case of severe inflation | Self-employed (individual). No unemployment is reported in statistics | Employed by the state, factories or institutions. Some subsidies available if job lost |
| Retirement and pension | No subsidies or pension | Set by the state; pension guaranteed |

Figure 5.1 Rural and urban China: a comparison (An example only, does not cover all cities and/or all periods; the late 1950s - early 1990s)

a) There were many kinds of ration coupons during the years of overall deficit in the country, e.g. for rice, wheat flour, maize flour, sugar, meat, cloth, cotton lint, etc., depending on the market situation in different cities. Grain coupons were eventually eliminated nation-wide in 1993.

The income gap between rural and urban areas is apparent as a whole (this is further discussed in the next section). However, that is only one aspect. A more essential difference is the social inequality. As figure 5.1 shows, the housing system and the last three listed items provide many privileges for urban residents only. Many scholars and officials have made strong appeals to reform the outdated system and eradicate the inequalities between rural and urban residents. The disadvantaged status of rural residents also means less control by the authorities, i.e. more freedom for the farmers. For example, while the one-child policy is successful in urban areas, it has been difficult to enforce in the countryside. Often, a rural family will have a second child if the first is a girl.

From another point of view, it allowed farmers to make an institutional breakthrough in the weak link in the planned economy. A brave reform involving the household respon-

sibility system was possible only in the poor rural areas. This reform also stimulated the rapid growth of TVEs. They are run in a different way from the state-owned enterprises (SOEs), which are concentrated in the urban areas. TVEs are collectively or privately owned. They have played a decisive role in raising farmers' income (see section 5.3). All this was possible only in rural areas.

5.2 Income gap and consumption

As a rule, low-income households spend a larger share than higher income households on basic foods. Such foods - especially grains and roots - have a lower income elasticity of demand, while some non-traditional foods and/or drinks (high-quality, processed or imported foods) have a higher elasticity. As income grows, the income elasticity of most foods declines from 1 to less than 0.2¹. Most non-food consumer goods have a much higher income elasticity. Wealthier families spend more on non-food consumer goods (such as clothes and electrical appliances), culture, recreation, travel and transport, and educating their children.

An indicator can be used to identify the income gap between these two groups of people: the ratio of per capita income of an urban resident to that of an average rural inhabitant. The per capita income in both areas, however, is to some extent incomparable. The income gap is reflected only partly in the consumption level of rural and urban households. In urban areas, living costs and price levels are higher, but a pension is paid to retired workers and some government staff have a grey income. On the other hand, rural people have their own grain and most vegetables (to some extent, also meat, eggs, etc.) and usually do not need to purchase water or fuel. These consumption data can be obtained only in sampling surveys. Table 5.1 serves as a basis for comparison (compare also table 3.4).

Based on a survey on the items consumed by rural and urban residents in the Delta, the SAAS reported some differences in food consumption between rural and urban residents (table 5.2). With the growth of rural income in recent years, the food expenditure pattern of rural and urban residents has narrowed to some extent.

A comparison between table 5.1 and 5.2 shows that the situation in both rural and urban areas is better than average in the Delta area. In 1999, the urban to rural income ratios were the smallest for Jiangsu - 1.87 - while the national average was 2.65 (5,854 yuan for urban and 2,210 yuan for rural). The ratio for Shanghai was 2.02 and for Zhejiang 2.13. This shows that farmers' income in the Delta is relatively high. In fact, the gap is wider in the poorer areas. Some researchers estimate that the income of the richest urban residents in Shenzhen (a reform-born city bordering Hong Kong) was 50 times that of the poorest farmers in Guizhou Province. This is an alarming signal and has attracted a lot of attention from the central government.

¹ For example, the income elasticity of food was 0.9 in less-developed countries, while it was only 0.16 in high-income countries (W. Schultz: *Transforming Traditional Agriculture*). In the late 1970s, the income elasticity of cheese in EC countries was 0.67, while that of wheat was negative (- 0.23).

Table 5.1 *Per capita food consumption in rural and urban China (selected years, in kg)*

| | Rural | | | Urban | | |
|----------------|-------|-------|-------|-------|-------|-------|
| | 1978 | 1990 | 1998 | 1985 | 1990 | 1998 |
| Grain | 247.8 | 262.1 | 249.3 | 134.8 | 130.7 | 88.7 |
| Vegetables | 141.5 | 134.0 | 109.0 | 144.4 | 138.7 | 113.8 |
| Edible oil | 2.0 | 5.2 | 6.1 | 5.8 | 6.4 | 7.6 |
| Meat | 6.0 | 12.6 | 15.5 | 22.0 | 25.2 | 23.9 |
| Eggs | 0.8 | 2.4 | 4.1 | 6.8 | 7.3 | 10.8 |
| Fish | 0.8 | 2.1 | 3.3 | 7.1 | 7.7 | 9.8 |
| Sugar | 0.7 | 1.5 | 1.4 | 2.5 | 2.1 | 1.8 |
| Alcohol drinks | 1.2 | 6.1 | 7.0 | 7.8 | 9.3 | 9.7 |

Source: China Statistical Yearbook, 1999. Data for milk and dairy products were not available.

Table 5.2 *Consumption of food and drink in the Yangtze Delta, 1997 (a survey, in kg per capita)*

| Items | Rural area | Urban area |
|--------------------------|------------|------------|
| Grain | 162.5 | 81.2 |
| Processed grain products | 12.4 | 31.3 |
| Vegetable oil | 5.1 | 9.6 |
| Pork | 16.4 | 18.7 |
| Beef | 0.5 | 3.8 |
| Mouton | 0.7 | 0.5 |
| Poultry | 5.3 | 13.2 |
| Eggs | 12.2 | 10.8 |
| Fresh milk | n. a. | 21.6 |
| Fish | n. a. | n. a. |
| Vegetables | 108.5 | 97.2 |
| Fruit & melon | 23.6 | 56.4 |

| | | |
|------------------|------|------|
| Sugar | 3.7 | 3.6 |
| Spirits and beer | 15.5 | 12.4 |

Source: SAAS, 1999.

The consumption of some commodities (e.g. grain, vegetables, mouton, eggs, spirits and beer) is greater in rural than in urban areas. This is because these goods can be produced by farmers at home (e.g. vegetables and eggs; some households also keep goats) at no explicit cost; it also reflects their self-sufficiency tradition. Spirits, beer and cigarettes are more common in rural areas, as a means to maintain close ties with relatives or friends. Rural residents believe that these commodities are necessary in order to create a friendly atmosphere.

The traditional consumption habit has a significant impact on agricultural production and marketing in the Delta. Fresh (liquid) milk, dairy products and beef were not popular foods in this area, because they were not produced locally. Cattle were used as the most important draft power in farming, but not for meat or milk. Southern China is especially suitable for paddy rice growing. Horses and mules were not good for farm work there. Cattle became to some extent the sacred animals because the rice harvest was dependent on well-managed farm work. Mao Zedong wrote: 'Oxen are a treasured possession of the peasants. 'Slaughter an ox in this life and you will be an ox in the next life' has become almost a religious tenet; oxen must never be killed...The slaughter of cattle is totally prohibited throughout the county of Hengshan'¹. Some farm households feed babies with milk powder, but the adults do not use milk; this is probably a result of their low income in the past, and they have not lost the habit. Some people say they just do not like the taste or flavour of milk, or cannot digest it because their stomach lacks the required enzymes.

An unexpected fact has been revealed by an SAAS survey: the Delta's farmers are approaching the consumption level of urban residents. Most rural families have durable consumer goods, including a colour TV, refrigerator, electric fan or air conditioner, and a motorcycle. The refrigerator is important in the changing consumption pattern regarding fresh products.

In short, the consumption of grain in the Delta will decrease in the future, while that of milk, poultry and fish will increase considerably. Vegetable, pork and eggs will remain at the same level of consumption. The self-sufficiency of Shanghai Municipality will decline for the majority of agricultural products, i.e. poultry, milk, eggs and fish in particular.

¹ Mao Zedong: *Report on an Investigation of the Peasant Movement in Hunan* (March 1927).

5.3 TVEs - the main source of farmers' income in the Delta

TVEs are one of the most important sources of income in rural China, and especially so since the 1980s. TVEs originated in the collective economy during the commune's period. Their original name was commune- and brigade-run enterprises, which mainly were the subsidiary part for the agricultural production, focusing on the manufacture of small farm-tools and other traditional farm inputs, repairing farm tools, and so on. The rural policy became more flexible after the 1979 reform. Farmers now have more opportunities to run a non-farm business at home or in a city.

The rural industries in China acquired their present name of township and village enterprises (or TVEs) in 1984, when the communes were abolished. In the two decades following the reform, rural industries boomed across the country, and the Yangtze Delta was one of the pioneers in China. Owners of TVEs can be rural communities (i.e. collectives) or individual families. They are characterised by a very flexible management system. TVEs have oriented themselves towards the market since the very beginning. Unlike SOEs, TVEs are totally dependent on their own efforts regarding materials, energy supplies, transportation and market channels.

The TVEs in Jiangsu and Zhejiang provinces are concentrated in the Yangtze Delta. This region is well-known in China for the rapid growth of TVEs, with an intensive influx of private and foreign capital and technology. In the early years of development, TVEs benefited greatly from the help of many retired technicians from Shanghai and neighbouring big cities. They became the TVEs' consultants or employees. As capital accumulated, some became joint ventures with foreign capital and have obtained licences to do direct export. Their technologies have been upgraded, which has increased their market competitiveness. This explains the TVEs' growing share of total industrial output value as well as of the nation's export volumes.

Of the 20 million TVEs in China in 1998, almost 10% were located in Shanghai, Jiangsu or Zhejiang. A more important fact is not their share of workers in industry, but their economic performance in this area: their value added was 21% of the country's total in 1998. The wages earned in Shanghai, Jiangsu and Zhejiang totalled 62.07 billion yuan, or 25% of the total for China. More impressive is that the taxes paid and fixed assets accounted for about 35% of all the TVEs in the country. Table 5.3 gives an overview of TVEs in the Yangtze Delta.

Table 5.3 TVEs in Shanghai, Jiangsu and Zhejiang compared to the whole country, 1998

| | Shanghai | Jiangsu | Zhejiang | China |
|--|----------|---------|----------|-------|
|--|----------|---------|----------|-------|

| | | | | |
|-------------------------------------|--------|--------|--------|----------|
| Number of TVEs (1,000) | 29 | 892 | 1,026 | 20,039 |
| Agriculture | -- | 1 | -- | 189 |
| Industry | 29 | 433 | 629 | 6,620 |
| Construction & transportation | -- | 143 | 135 | 4,969 |
| Services | -- | 315 | 264 | 8,261 |
| Number of TVE workers (1,000) | 1,451 | 8,374 | 7,882 | 125,365 |
| Industry | 1,451 | 6,338 | 6,775 | 73,342 |
| Value added (billion yuan) | 48.27 | 197.46 | 211.87 | 2,218.65 |
| Total profit (billion yuan) | 6.79 | 15.13 | 15.97 | 196.93 |
| Taxes paid (billion yuan) | 3.65 | 13.22 | 13.54 | 86.62 |
| Wages (billion yuan) | 9.61 | 27.72 | 24.74 | 248.30 |
| Fixed assets of TVEs (billion yuan) | 153.99 | 381.20 | 317.17 | 2,440.19 |

Source: China Statistical Yearbook, 1999.

About 125 million farmers have become workers in TVEs, although in the statistics they are still classified as being part of the rural population. From the population statistics of Jiangsu and Zhejiang, it is evident that the Delta is still very rural. At first glance, the majority of the population (50 - 75%) of this area is still in the agricultural sector. In reality, however, since the 1980s a considerable proportion has worked in this sector for only a couple of weeks a year (in the busy farm seasons). At the urban construction sites, they are usually called peasant workers. The workers, maintaining the status of farmers, receive their wages every month, as do the urban workers in cities. Their income mainly comes from the TVEs rather than from their very small farms.

The Ministry of Agriculture is responsible for establishing the policies for the development of TVEs (as a part of the rural economy).

The days of overall deficit in China, when even primitive ways of production could earn a profit, are over. TVEs face challenges from urban industries, because they too are under pressure brought about by the reform and the process of opening up. No company will find it easy to survive without major restructuring and implementing technological innovations. Many TVEs in areas with better infrastructure and easily available information, such as those in the Delta, have updated their technologies in good time; some have become joint ventures with foreign capital and modern equipment and technology.

5.4 Food industry and three types of TVEs

According to the MOA, in the mid-1990s only about 30% of farm products were consumed after undergoing industrial processing, whereas this figure was as high as 80% in some developed countries. The food industry is on the priority agenda for the coming decades in order to increase the profitability of the agribusiness sector. The MOA reported that the output value of the food processing industry (mainly in the urban areas) increased by 6.8 times between 1980 and 1997; in 1980 the output value was only 251.38 billion yuan (USD 30 billion), which on a per capita basis amounts to only USD 2 per month. The value added of the food industry was about 12.7% in the industrial sector, and only 18% of the gross output value of agriculture. This level is well below that of developed countries.

In 1999, the food and drink sector in China had 21,094 enterprises (in the list of statistics), employing 3.12 million workers, but the value added was only 155 billion yuan (table 5.4). The share of value added accounted for 7.84% and labour 6.53% of the total industry sector. Food and drinks manufacture accounts for only 2.3% of the country's industrial GDP.

The value of processed food for exports has been limited. For example, China exported only USD 6.41 billion in 1994, accounting for 58% of total food exports (table 5.5). Fish, meat and sugar were the main contributors to the export value of processed food.

A similar situation can be observed in TVEs. While the total export value of TVEs in 1999 was 774.4 billion, the TVEs' five sub-sectors - i.e. light industry, clothes, textile, handicrafts and food - together exported 489.5 billion yuan, or 63.3% of the total. However, among the five sub-sectors, food export constituted only 6.1%.

Table 5.4 Food and beverage industry in China, 1999

| | Food processing | Food manufacture | Beverage |
|-----------------------------|-----------------|------------------|----------|
| Number | 11,909 | 5,368 | 3,817 |
| Staff and workers employed | 1,410,000 | 770,000 | 940,000 |
| Value added (billion yuan) | 68.15 | 32.50 | 54.36 |
| Sales (billion yuan) | 318 | 112 | 149 |
| Total profit (billion yuan) | 2.87 | 0.92 | 6.92 |

Source: China Statistical Yearbook, 1999.

Table 5.5 *Export of processed food from China, 1994 (unit: USD 1,000)*

| | (SITC) | Export value of Processed food (1) | Total food export (2) | (1) / (2) ratio % |
|----------------------|--------|---------------------------------------|--------------------------|----------------------|
| Live animals | (00) | 0 | 463,799 | 0 |
| Meat etc. | (01) | 715,749 | 728,444 | 98 |
| Dairy products etc. | (02) | 20,146 | 65,071 | 31 |
| Fish etc. | (03) | 2,596,075 | 2,596,079 | 100 |
| Cereals etc. | (04) | 188,933 | 1,989,447 | 9 |
| Fruit and vegetables | (05) | 1,891,322 | 3,430,565 | 55 |
| Sugar etc. | (06) | 328,056 | 328,062 | 100 |
| Coffee, tea, etc. | (07) | 48,699 | 598,592 | 8 |
| Feed etc. | (08) | 449,267 | 589,685 | 76 |
| Other | (09) | 171,199 | 171,317 | 100 |
| Total food | (0) | 6,409,446 | 10,961,061 | 58 |

Source: Lu Feng, 1997.

The institutional factor has been a major hurdle. Before the reform, only SOEs could purchase and process major farm products, including grain, cotton, meat, tobacco, oil-seeds, silk, etc. The monopoly of urban industry and the state procurement not only deprived farmers of any possibility to process their products in rural areas, but also led to bureaucracy and low efficiency. As a part of the reform of the SOEs, the number of staff and workers employed in the food industry shrank considerably, from about 4.35 million in 1994 to 3.12 million in 1998. The backward situation of the food industry in China is also due to:

- The low level of urbanisation. Rural people (over 70% of the total population) buy only unprocessed food. Also, the rural population lacks purchasing power and has a self-sufficient lifestyle.
- An irrational agricultural production structure. In a deficit economy - which China had two decades ago - the policymakers think mainly about the quantity of output, not the quality or the value added of products. Grains and many field crops have relatively short processing chains. The longest processing chains are associated with animal products (e.g. dairy), which used to be in short supply.
- The poor organisation of market chains and little investment in market surveys and research. The value added of processed food was low and lacked competitiveness on

the international market.

Table 5.3 shows that the majority of TVEs have nothing to do with agriculture, but provide a wide variety of products, e.g. clothes, toys, shoes, machine tools, household electrical appliances, chemicals, construction materials, and even optical cable, etc. TVEs cover almost every profile of the urban industry (except the defence industry, etc.). With their flexible mechanism, cheap labour and improved management, they are able to compete with the large industry, although their material and energy supplies are not guaranteed. To gain an insight into TVEs, they can be roughly divided into two types:

The first category - TVE₁ - comprises the largest share of TVEs in China today. They were set up in the deficit years to supplement various kinds of deficit goods, e.g. fertilisers, farm tools, cement, etc. They use all kinds of non-agricultural materials and differ little from the urban industries.

The second category - TVE₂ - uses agricultural material; this is possible mainly due to the fact that since the reform there has been less government control. This category includes food processing, drinks, textile and clothing, leather and fur processing, wood processing, etc. Statistics about these kinds of TVEs cover the period since the early 1990s, and break-downs by regions since 1996.

According to the current FYP, the food industry will become an increasingly important part of the national economy. As one of the most dynamic forces in the Chinese economy, the role of TVEs cannot be neglected. It is better to separate from the TVE₂ category another category, i.e. TVE₃ (see figure 5.2) comprising those that process and produce food, drinks, tobacco and feed, as well as all kinds of services for agricultural marketing chains (storage, package, transportation, wholesale, retail, etc.). Enterprises in the TVE₃ category have the following characteristic features and will have a bright future:

- The majority are labour-intensive enterprises. This applies even in the USA. More surplus rural labour could be absorbed by the industry and services. More jobs mean higher income for local people, and most commodities can meet the demand of the local market.
- Geographical advantages. These TVEs are close to the production areas, which means that transport costs can be much lower than in the big cities, especially because most farm produce is both perishable and bulky. The rural area has fewer polluting factories, which is vital to food quality and safety.
- Less investment and easy to train workers. Food and drink factories can be capital-intensive high-tech firms, or labour-using factories. It is important to have a clear orientation towards developing labour-intensive factories and training managers and workers. Enterprises in the TVE₃ category are more feasible in rural areas.

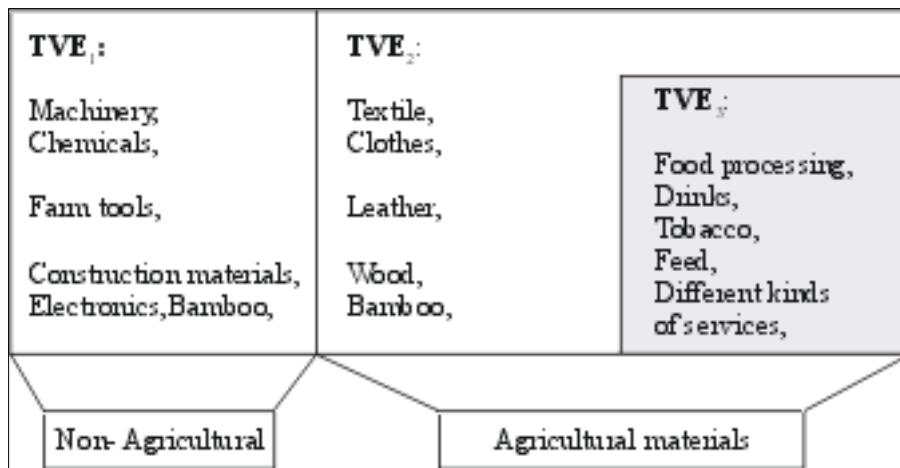


Figure 5.2 Three types of TVEs

- Enterprises in the TVE₃ category are more environment-friendly. Most by-products can be returned to farms as manure or can be recycled. A higher rate of recycling means less waste and lower costs. TVE₃ - with its core activities focussed on food, drinks and feed industries and associated services - can become a new growth point in rural areas.

The food processing enterprises funded by foreign money comprise a wide range of activities, from drinks and fast foods, to meat and dairy processing. These joint ventures might co-operate with SOEs or with TVEs (in both cases as a share-holding partner). The most prominent so far is Nestlé, which has set up several branches in China. However, there are no statistics in this respect.

5.5 Rural-urban market chains

Various channels link rural with urban areas. One of the important ones is the food market chain, i.e. from field to table. Traditionally, the Chinese like to buy fresh food at free markets and grocery stores. A large proportion of agricultural products are sold on the urban and rural free markets (table 5.6). Naturally, most foods are not processed. This consumption habit still exists. In the years of deficit before the reform, free markets were closed for many years. Many kinds of food (grains, flour, meat, eggs, sugar, etc.) were distributed with ration coupons.

Table 5.6 *Free markets in urban and rural areas, 1985-98*

| | 1985 | 1990 | 1996 | 1998 |
|----------------------------|--------|--------|----------|----------|
| Number of free markets | 61,337 | 72,579 | 85,391 | 95,379 |
| Urban | 8,013 | 13,106 | 20,832 | 27,698 |
| Rural | 53,324 | 59,473 | 64,559 | 67,681 |
| Sales value (billion yuan) | 63.23 | 216.82 | 1,469.49 | 1,983.55 |
| Urban | 12.07 | 83.78 | 788.25 | 1,104.28 |
| Rural | 51.16 | 133.04 | 681.24 | 879.27 |
| Products (billion yuan) | | | | |
| Grain and oils | 4.96 | 14.68 | 114.11 | 146.48 |
| Meat, poultry, eggs | 14.01 | 61.88 | 333.82 | 355.74 |
| Vegetables | 4.88 | 26.42 | 194.46 | 220.70 |

| | | | | |
|-----------------------------|------|-------|--------|--------|
| Fish, shrimps, etc. | 3.32 | 18.24 | 138.61 | 165.90 |
| Fruits | 2.55 | 18.35 | 110.64 | 123.47 |
| Cattle, horses, mules, etc. | 3.26 | 3.83 | 12.34 | 14.82 |

Source: China Statistical Yearbook, 1999. In current prices.

The data in table 5.6 show that urban sale volumes have increased very rapidly since the mid-1980s and surpassed those in rural areas. The sales value on the free market grew from 63 billion yuan in 1985 to about 1,984 billion yuan in 1998. The increase in such sales mainly occurred in urban areas. This was a result of the higher purchasing power of urban residents, and also of the slow development of the food industry (processed food is available mainly in grocery stores, supermarkets, etc.).

Groceries are a main outlet in both urban and rural areas. They are now mainly owned by individuals. Usually, they are very close to residential areas and have very long or flexible time working hours (e.g. from 7 am till late in the evening).

Department stores used to be one of the most important places for purchasing processed foods. They are mainly located in city centres and enjoy a good reputation. They face tough competition from other kinds of businesses. As the food supply improves and transport becomes more convenient, consumers prefer to buy their food from nearby shops. It has been reported that department stores are losing their customers. Foreigner-owned stores are exceptional in China (the French 'Printemps' in Shanghai, and Lufthansa and Sogo in Beijing).

Supermarkets are an advanced form of food outlet, and have been booming in all cities and county centres since the mid-1990s. The advantages are relatively low prices, one-stop shopping, convenient locations, wide varieties and choices, normally high quality and good safety inspection, standardisation, etc. There is increasing competition between supermarkets in large cities, including foreign names, such as Carrefour (France) and Metro (Germany). Carrefour and Metro have large branches in Shanghai and Wuxi.

Wholesale markets are a relatively new concept; most have appeared only since the mid-1980s. In the past, the government controlled the purchase of agricultural products in order to ensure an even distribution among urban consumers. The name wholesale market existed before, but it had nothing to do with the average citizen; most thought it was just another government agency.

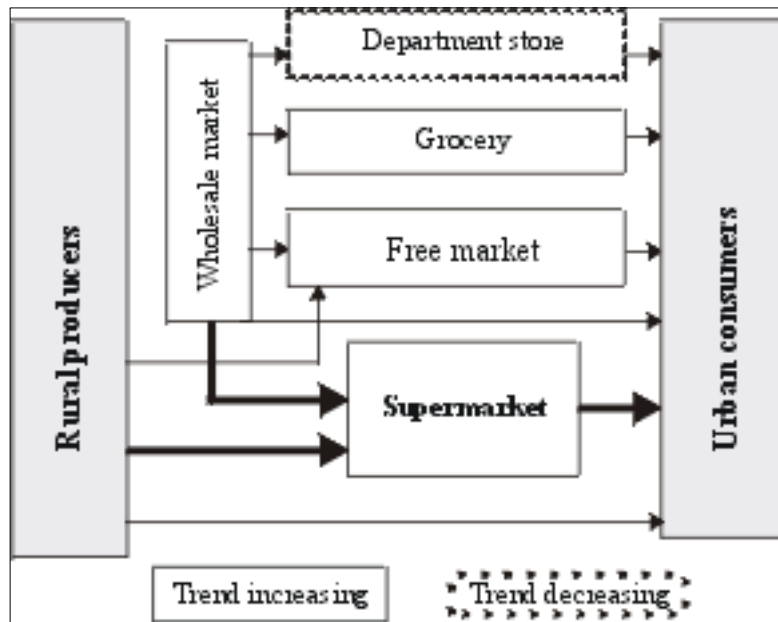


Figure 5.3 Market links between rural producers and urban consumers

In large cities, such as Shanghai and Beijing, wholesale markets attract a great number of consumers. Such markets are run by the local government or the rural workers collectively. The main vegetable-producing provinces sell their products via these large wholesale markets. Although the main buyers are retailers, individual consumers also come to buy fresh vegetables and fruits. The most important advantage of going to this type of market is the low prices, because the foods (especially vegetables and fruits) come directly from the producing areas. The disadvantages are that they are usually far away from residential districts, have poor standardisation, lack food safety inspections, etc. The various market chains are shown in figure 5.3.

A large flower market - Shanghai Metropolis Flowers' Harbour Co Ltd. - was opened at the end 1999 in Shanghai for the wholesale and retail trade in cut flowers. The city plans to develop flower-futures trading in the near future. An electronic board at the market will also display the latest price of flowers in major cities around the country, and customers will be able to obtain information about flower planting and arranging. The market has a total designed business space of 10,800 square metres. Situated only 100 metres from the well-known Nanjing Road commercial area in Shanghai, the market has become a hot place for flower wholesale and retail firms. All the 150 stands available have been rented out via an auction. Flower firms from the Netherlands, Japan, Singapore and other countries participate at the market.

5.6 State farm as the 'urban-type' enterprise

The state farms are historical products in China. They were set up mostly in the early 1950s, following the Soviet model. The original purpose was to create jobs for demobilised soldiers in remote regions with a vast area of unused land. Their task was to provide the state with commercial products, because most family-run, small-scale farms were supposed to be self-sufficient. In the Yangtze Delta, only Chongming Island has many state farms (about 20 in total), because the island has a vast area of newly-reclaimed land.

The state farms in China acted as an 'urban-type' enterprise. Located in the countryside, the farm workers had all the urban privileges (figure 5.1). There was a special ministry for their administration. As the general supply and demand situation has fundamentally improved since the reform, the importance of state farms has decreased (the ministry was also lowered in rank to become a department within the Ministry of Agriculture), but statistical data have been separated from the common rural economic data. State farms are different from family-run farms in many respects:

- Ownership and task. The land of state farms is owned by the state (public ownership), while that of rural farm households belongs to the collective (see sections 4.1 and 4.3). A state farm's production plans came directly from the central or local government. The governments are responsible for investment in the state farms. In turn, the state farms have the obligation to implement government policy and to perform their tasks, i.e. to deliver key products to the state. Therefore, state farms have become the production bases to ensure the supply of various commodities and/or serve as breeding centres.

- Specialisation. State farm workers are often specialised in certain specific crops. This is necessary in order to increase productivity and provide the state with more commodities. The most important commodity is grain (wheat, rice, corn, and also soybean); the next is cotton for the textile industry - the most important earner of hard currency. Rubber plantations in the south of China are mainly located on state farms. Large machinery can be used efficiently only if the farms are specialised. A very small proportion of state farms are specialised in livestock production. Only suburban farms produce milk for local consumption.
- Diversification. Many state farms have to diversify their activities, i.e. perform additional tasks. New enterprises have been set up to earn more money, as the income derived from farm work is not attractive compared to that derived from other enterprises.
- Management scale. Chinese state farms, like the Soviet state farms (sovkhoz), are large: most encompass over 2,000 ha. However, the administration body is also large. As in all industrial enterprises in China, state farms have a considerable number of management staff. Therefore, on average a state farm worker has only one extra hectare of cropland (table 5.7). Assuming the management staff account for a third, and a third of the farms are specialised in livestock and rubber production, land per worker would still be no more than 5 ha. That is still a very small scale.

Table 5.7 State farms in China: an overview, 1993-99

| | 1993 | 1996 | 1998 | 1999 |
|---------------------------------|-------|-------|-------|-------|
| Number of state farms | 2,159 | 2,128 | 2,101 | 2,051 |
| Number of workers (1,000) | 5,323 | 4,883 | 4,375 | 4,177 |
| Cultivated area (1,000 ha) | 4,482 | 4,700 | 4,817 | 4,836 |
| % of national total | 0.47 | 0.48* | -- | -- |
| Area per farm (ha) | 2,076 | 2,209 | 2,293 | 2,358 |
| Workers per farm | 2,465 | 2,295 | 2,082 | 2,037 |
| Area per worker (ha) | 0.84 | 0.96 | 1.10 | 1.16 |
| GOVA (billion yuan) | 30.21 | 65.00 | 68.07 | 63.32 |
| Output of grain (million t) | 11.09 | 15.51 | 16.46 | 16.97 |
| % of national total | 2.43 | 3.32 | 3.21 | 3.74 |
| Output of cotton lint (1,000 t) | 386 | 509 | 721 | 734 |
| % of total | 10.32 | 12.11 | 16.02 | 19.17 |
| Output of meat (1,000 t) | 423 | 573 | 658 | 663 |

| | | | | |
|--------------------------|-------|-------|-------|-------|
| % of total | 1.10 | 1.25 | 1.15 | 1.39 |
| Output of milk (1,000 t) | 1,051 | 1,039 | 1,131 | 1,088 |
| % of total | 21.08 | 14.28 | 15.19 | 13.48 |
| Output of eggs (1,000 t) | 209 | 229 | 232 | 214 |
| % of total | 1.77 | 1.16 | 1.15 | 1.00 |

Source: China Statistical Yearbook, 1999, 2000. * 1995 figure. The three rows in italics were calculated by the author based on the above data.

- Workers. The labourers employed on state farms are called workers. Although located in a rural area, their household status remains 'urban'. State farm workers enjoy the same welfare benefits as workers in urban industry (see figure 5.1). Female and male workers retire at 55 and 60, respectively, and receive a pension. The organisational form of state farms is similar to that of the army, i.e. it is quasi-military.

Like the state farms in other provinces, those in Chongming County are mainly specialised in grain production. There are 10 dairy enterprises on seven state farms (only one state farm does not have cows); the largest has 1,500 animals. Most dairy cows kept in this county are on state farms. The total area under flowers in the county amounts to 1,500 ha (farm households 600 ha; state farms 900 ha). Flower production is carried out on all eight state farms. Between them they have set up 20 flower-growing enterprises.

State farms are undergoing restructuring. Most have adopted a system similar to the HRS, dividing the large farm into small, family-run farms. In addition, some have become joint ventures with foreign capital (capital from Hong Kong, Macao and Taiwan is counted as 'foreign' capital). These farms are mainly engaged in the production of vegetables and livestock, and in food processing. There are many preferential conditions for international companies, in order to attract foreign investment.

6. Changes in China's Agricultural Policy

6.1 The new situation

To understand more about the future development of the Yangtze Delta, one must look at what is happening in the countryside. China began to face a surplus economy for the first time ever in late 1997. Briefly, the most important characteristic features can be generally described as follows:

- Slow-down in farmers' income growth. Between 1980 and 1996, the rural population's income grew rapidly (see table 6.1). However, when the deficit economy came to an end, higher farm output stopped meaning higher income. Grain reserves exceed the available capacity in leading grain-producing provinces. The procurement price of many farm products is no longer profitable, and prices at the free market continue to drop. Some farmers have to sell their products at a reduced price. The shops are full of consumer goods, but people seem to be reluctant to spend much money. Most families in urban areas have acquired many durable consumer goods (one or two TV sets, a refrigerator, telephone, apartment, etc.). With a population of over 900 million people, the rural market is huge. The crux of the problem is that a considerable proportion of farmers lack money.

Table 6.1 Growth rate of per capita income of farm households, 1985-99

| Year | Net income of rural area (yuan) (1) | Growth over previous year (%) | Disposable income of urban household, (yuan) (2) | (2) / (1) |
|------|-------------------------------------|-------------------------------|--|-----------|
| 1985 | 397.6 | 4.9 | 739.1 | 1.86 |
| 1990 | 686.3 | 9.0 | 1,510.2 | 2.20 |
| 1995 | 1,577.7 | 5.3 | 4,283.0 | 2.71 |
| 1996 | 1,926.1 | 9.0 | 4,838.9 | 2.51 |
| 1997 | 2,090.1 | 4.6 | 5,160.3 | 2.47 |
| 1998 | 2,162.0 | 4.3 | 5,425.1 | 2.51 |

| | | | | |
|------|---------|-----|---------|------|
| 1999 | 2,210.3 | 3.4 | 5,854.0 | 2.65 |
|------|---------|-----|---------|------|

Source: China Statistical Yearbook, 1997, 2000.

- Enlargement of inter-regional income gap. Of course, not all farmers are poor. The net income of rural people per year in the Yangtze Delta and the region between Shenzhen and Guangzhou is over 4,000 yuan per year, about double the national average (see section 5.2 and table 6.1). While in some grain-producing provinces the growth rate was negative in 2000, Zhejiang's farmers saw an increase of 7.6%, which was a relatively high level (the national average was about 2.5%).
- Difficulties transferring surplus agricultural labour. The low income of rural residents is the result of low productivity and the associated surplus labour (invisible unemployment). China has almost 300 million agricultural labourers engaged in food grain production. Considering the relatively small amount of arable land and the nation's industrial potential, a maximum of 200 million rural workers could support the entire population. This would involve using more machinery, which would mean higher labour productivity and higher income for farmers. The question is: where could the surplus rural labour be re-employed and earn a higher income?
- Urban unemployment and lack of vitality of SOEs. The reform of urban industries and governmental institutions is intended to achieve higher efficiency and to get rid of redundant staff. Urban unemployment has become a new challenge to areas in which SOEs dominate. More and more loss-making factories are being closed down because they cannot sell their products, and the number of laid-off workers is increasing. People are unsure about the future development of the reform. They prefer to save their money for their old age, their children's education, medical services, etc. This situation has negative influences on the growth of rural income in at least two respects: more difficulties developing TVEs, and fewer opportunities for urban areas to bring in cheap labour from the countryside.

In short, the slow growth of farmers' income has become the central issue in the Chinese economy; if this situation continues, there will be political instability. Because all these facts are more or less linked with the situation of agriculture, it will not be possible to solve many of China's problems without considering the future development of agriculture. The Central Committee of the Chinese Communist Party and the Chinese government have held several conferences to analyse the new situation and new problems. The major conclusion is that all provinces must start restructuring their agricultural sector. This report does not purport to be comprehensive: it simply describes the most important changes to China's agricultural policies in the last couple of years. The following discusses solutions to the

the major problems the country faces in this respect.

6.2 Break with the old patterns

Viewed from the described general socio-economic background, the new century demands a new, systematic set of policies. These must be implemented in a new spirit of reform, rejecting old-fashioned thinking. The traditional pattern - a deficit and closed economy, with very low incomes and productivity - was formulated in a centrally-planned economy. We were in too much of a hurry to catch up with the advanced countries and violated many of the natural laws of development. However, now - two decades after the reform - a relatively solid foundation for economic restructuring has been laid.

- Each part of the country is being encouraged to develop its own comparative advantages according to the local conditions. Each province - or even each prefecture - must determine its specific and leading commodities. The specialisation of agricultural production and the formation of specialised production zones will probably proceed at a higher speed.
- Most provinces - especially those in the coastal region (i.e. from Liaoning Province to Guangdong and Hainan Provinces, with Shanghai Municipality at the centre) - will abandon the provincial self-sufficiency policy. It will require some courage to break the old pattern of 'small but everything' and 'seeking self-balance within a small region'.

The eastern coastal areas and the suburban areas will reduce their production of grain and cotton (which are land-intensive crops). They are being encouraged to develop suburban agriculture, i.e. high-quality, high value added and export-oriented agricultural bases equipped with modern technologies. It is expected that export-oriented agriculture will develop rapidly in the near future.

- Central China will put more efforts into exploiting its favourable conditions and expanding its production of grain, cotton, oil-seeds, sugar and other arable crops. Local governments, with the help of the central government, will improve the infrastructure on farmland and put the emphasis on economic returns through the development of animal husbandry and the processing of farm products.
- National policy is to restore the environment in the western region of the country, which has become ecologically fragile. In abandoning the self-sufficiency in grain policy, the area will adopt more water-saving technology and return the over-exploited cropland to forest cover or grassland in a planned way. Livestock production, forestry management and specific fruit production will become the key sectors.

In this context, the Yangtze Delta has made a good start, since it began to remould the agricultural production structure earlier than other areas. Zhejiang Province has made a first

step (see section 4.8) by producing a wider range of higher quality agricultural products in order to satisfy Shanghai's demand. More importantly, the farmers in the Delta are less dependant on income from farming (which is already much higher than other areas) and the growth rate of their income has remained high - a precondition for upgrading the technological standards of their TVEs.

6.3 Quality emphasised

There is a surplus of many kinds of products, e.g. grain, vegetables, fruits, aquatic products, livestock products, etc. However, markets and restaurants sell quite a lot of food or materials imported from abroad. McDonalds, Kentucky Fried Chicken, pizza and other kinds of Western fast-food are attracting more and more young people, especially in the big cities. They want to save time and seek varieties and more convenience. The difference is in quality. For example, the wheat for bread is often imported, because many varieties of Chinese wheat are not suitable for baking bread. The protein content of Chinese wheat is low. Also, most Chinese beef is of low quality because there are few special breeds for meat. The beef on the shelves of groceries in small cities or towns often comes from old cattle that are no longer fit to be draught animals.

As income rises, people are no longer satisfied with low-quality food. They become more aware of the need for balanced nutrition and pay more attention to nutritional value, food safety, taste and flavour, shape and appearance, packaging and so on. In the past, rice and wheat flour were distributed via the rationing system, and so people had no choice as regards type or quality. Today, the direct grain consumption of an urban resident is on average less than 90 kg a year, compared to 180 kg or so in the past¹. With much more diversified foods, urban consumers want more high-quality food. The Chinese prefer rice Japonica to rice Indica. Early rice is usually of low quality (because of the short vegetation period) and is gradually losing its market share. Early rice used to be necessary as it grows fast and after its harvest another crop (late rice) could be grown. Late rice is usually Japonica, and the early Indica. In the past, when the total output of grain was emphasised, farmers planted rice twice because it was a high-yielding crop. It did not matter which variety of rice a farmer delivered to the state company, because all he had to do was fulfil the total purchase quota in time.

The new situation - and hence the quality-first policy - has important impacts on the production pattern in the Delta and other parts of China. The area under early rice, for ex-

¹ A decade ago, there were hot disputes over the question how much grain is necessary for China on a per capita basis. Some scholars argued that 400 kg was the minimum. They did not distinguish how much should go to the consumer's table and how much to animal production. Nor did they expect the rapid growth of meat output in the past decade. Increased meat supply led to a reduction of direct grain consumption. The 90 kg of grain 'saved' and some percent of imported grains must be transformed into the products from an animal source.

ample, has shrunk considerably in just a couple of years. In 2000, farmers in Zhejiang switched almost 500,000 ha of land from early rice to vegetables, melons and other high-quality products.

Quality is particularly important on the world market. Low-quality products can hardly be exported to other countries. Domestically, only about 30% of fruits sell well, and only 1.3% are exported to international markets. New varieties of fruits and vegetables have been rapidly introduced. During the 1999 harvest season in Zhejiang, the price of a kilo of normal tangerines was about 1 yuan, while a newly-introduced Japanese variety sold for 12 yuan. Farmers are thirsty for better seeds and high-quality varieties.

To guarantee this structural change in production (emphasis on quality rather than quantity), it is necessary to work out new standards of quality control in order to meet the international market. More efforts must be made in terms of research and investigation.

6.4 Dairy industry as a priority

Animal production (mainly pig and poultry) underwent rapid growth in China, but mainly in the land-scarce eastern and central parts of the country. The major problem lies in feed grain supplies, which require an intensive use of cultivated land. Of course, part of the demand for feed can be satisfied by imports from other provinces or countries; however, it is important to use the low-yielding land more rationally, especially the vast grasslands and other natural resources in the western part of China. Agricultural restructuring requires the authorities at all levels to make a breakthrough in the development of the dairy cattle industry. Milk production and the dairy industry are priorities in the current FYP (2001-2005) for Socio-economic Development. This has been officially included in the proposal prepared by the Ministry of Agriculture. The reasons for this are:

- Firstly - and most importantly - dairy cattle is a labour-consuming industry, which is in accordance with the resource composition in China. Under the current land contract system, new generations will continue to enter the farm sector, and the newly formulated households will demand additional land plots. Possibly, the trend will be to continue to split the already-small farms. The crop-first rural economy with its small-scale farming will not have the room to absorb extra labourers. Clear evidence of this is that the share of agricultural workers in the total labour force has increased since 1997 after declining for many years. This implies fewer opportunities in urban areas, and in TVEs in particular. The surplus labour force has been a major challenge to the income-enhancement drive in rural China, but the main reasons for such a surplus has been the small amount of per capita arable land (around 1/2 ha) and the fact that the majority of farmers are engaged in crop farming. To manage such a small farm, it is more than sufficient for a farmer to spend 50-60 workdays a year on it. The consequence is that agricultural labour productivity in China is bound to remain low in the

future. Dairy cattle require more labour per animal.

- Second, dairy cattle provide materials for the processing industry: milk, meat, and hide/leather. In terms of world milk output, cow milk is about 25 times that produced by sheep, and beef and calves provide 25% of the world's total meat supplies. In 1996, the total world-wide export value of dairy products was about USD 29 billion, while the export of cattle and beef was USD 17.8 billion, or a third of total meat export. The dairy and cattle industry accounted for 15% of the world's total export volume of agricultural and food export (FAO, 1998). China's share of world-wide cattle products is very small. One of the best ways to help the farmers in the western part of China rid themselves of poverty is to encourage them to raise one or two cows. One of the major reasons the food industry is underdeveloped is that China processes mainly vegetables, grains, beans, fish and meat. A large proportion of the food processed in developed countries comprises dairy products. A government official said that a considerable growth of dairy production in the coming decades will probably increase the output of the processing industry.
- Third, the dairy industry has long production-marketing chains and is probably more closely linked to different sectors than any other farm item. Apart from the necessary services and facilities common to all animals (water, feed and power supply, machinery, shed and other construction materials, breeding and veterinary services, etc.), dairy cows requires a higher level of management than any other class of animals. The most obvious feature of fresh milk is that it must be consumed as soon as possible, otherwise it must be cooled or processed. Milk requires many more services and much higher sanitary standards than most farm products. Milk marketing must be well-organised and co-ordinated, which means more rural labour could be shifted from farming to marketing and processing. There are some cases in Shandong and Hebei Provinces where dairy farmers have become richer within only a year or two.
- Fourth, the development of the cattle industry would necessitate a more rational use of natural resources, especially in the western part of the country. It has become a cliché that 'China is a land-deficit country'. In fact, this applies only to the fertile cropland. The situation would be entirely different if we were to use our pasture in a more friendly manner and invest in protecting and improving the pastureland and grassy hills, instead of performing artificial reclamation (which is often destructive) in order to enlarge arable land. It is becoming a consensus among many Chinese economists that there is enough fertile arable land in China to produce food grain for 1.3 billion people, especially in view of the declining consumption of rice and wheat in urban areas (below 90 kg a year). Future increases in grain production in China will mainly go to animal feed. But even the concentrated feed includes many other components (e.g. soybean and fishmeal), and dairy cattle require many kinds of roughage and grass. China is the second largest country in terms of pastureland. The productivity of its pastureland is estimated to be 1/82 of that of New Zealand and 1/20 of that of the

USA.

- Fifth, the dairy industry has the most development potential. In 1999, per capita meat output in China was 47.2 kg (world average: 36.6 kg), with 31.8 kg of pork and only 4 kg of beef. A Chinese person had 17 kg of eggs on average, much higher than the world level (about 9 kg), while milk output per capita was only 6.4 kg (some provinces had only 1 kg or less, see table 4.7) in 1999, almost 1/15 of the world average.

The annual increase of animal products in China during the 1980-1999 period of fast growth was strongly biased in favour of pig and poultry:

- 2,460,000 tons for meat (mainly pork);
- 990,000 tons for eggs;
- 350,000 tons for milk.

As a result, China's import of dairy products increased rapidly, from 60,000 tons per year in the period 1991-95 to 148,000 tons in 1999, excluding smuggled products (100,000 tons). In addition, China imported 375 tons of beef at USD 4,262/ton, and exported 402 tons at USD 1,517/ton.

In short, to accelerate the development of dairy farming is one of the most urgent tasks for China in this new century. Dairy farms in the Yangtze Delta are located mainly on state farms in suburban Shanghai. Milk production is underdeveloped in the Yangtze Delta (see tables 4.8, 4.9 and 4.10), but consumption will increase remarkably as income increases. This means there is a lot of development potential.

6.5 Development of the western region

The national programme for the development of the western region¹ was worked out at the People's Congress in March 2000. The strategy to highlight the development of the western region was necessary for many reasons.

In 1998, serious flooding in the Yangtze River basin lasted for almost two months. Starting in the late 1950s, counties along the Yangtze River had been mobilised to reclaim land from the Dongting and Boyang lakes in order to increase grain output. The lakes served as a natural buffer to regulate water runoff. Since these lakes have shrunk greatly due to reclamation, the floods caused heavy losses in 1998. Deforestation and soil erosion are also worsening in the upper reaches of the Yangtze. The floods taught us an expensive lesson: it is

¹ The western region includes 12 province-level units: five in the north-west (Xinjinag, Qinghai, Gansu, Ningxia, Shaanxi), five in the south-west (Tibet, Yunnan, Guizhou, Sichuan, Chongqing), plus two Autonomous Regions: Inner Mongolia in the north and Guanxi in the south (see figure 2.5).

dangerous to try to increase grain production without providing adequate control of erosion.

Located on the north of Tibetan Plateau, Qinghai Province is the source of both the Yangtze and the Yellow River. However, more and more northern provinces are suffering from water shortages each year. Tens of thousands of people in drought-hit counties of Gansu Province must collect drinking water from several kilometres away. Irrigation has become impossible. About six million ha of cropland is located on slopes of 25° or greater, and erosion is extremely serious in Ningxia. Soil and wind erosion has become a major threat to the daily life of local people. An area equivalent to the cropland of an average county is disappearing every year due to desertification in the western region. Beijing frequently suffers from sandstorms originating from this dry area.

East-west income gaps (especially rural income) have reached an alarming point, due to historical and natural causes. About 30 million people in the west still live in absolute poverty. The migrant armies from the rural west are huge burdens on the transportation system, and increase social insecurity in eastern cities. Furthermore, the majority of ethnic groups live in the western and bordering region. Improving their livelihood will greatly enhance the prosperity and safety of China. In short, it is imperative to develop the western region. The key is to adjust its agricultural policy.

Chinese policymakers, scholars and ordinary people have learned from the negative experiences of the past and are now more aware of the importance of a balance between economic growth and ecology, and the sustainability of agricultural development.

China's abundant grain reserves¹ will be used to help bring about the planned development of the western region. Some of the grain will go to erosion-prone regions in order to return some cultivated land (which is inefficient to grow grain but causes soil erosion) to forests or grassland, and particularly to stop the abuse of natural resources. The western provinces and Autonomous Regions will set aside ecologically-fragile cropland and return it to forest and grassland. Farmers in the west will receive a certain amount of grain as compensation for their reduced income from crop production in the coming few years. Some of the land will be returned to grassland.

The central government will pour tens of billions of yuan into water conservancy projects and protective forest belts in a bid to recover the western grasslands. The construction of infrastructure in the hinterland will go faster and include highways, airports, gas

¹ The grain reserve is not published officially in China. The fact was that many state-owned companies refused to buy grains in 1998-99 because they had no room for additional purchases. As estimated by some experts, the total grain reserve in the state-owned companies was over 275 million tons in 1998. A sample survey reported that the 67,000 farm households had on average 662 kg of grain, implying the total grain in farmers' hands surpassed 250 million tons. Taken together, the grain stocks exceeded 520 million tons in China in 1998. The maintenance cost of the reserve increased and the losses were enormous. This aggravated the already tight financial situation of the government. See also FAO: *Agricultural Outlook*.

pipelines, electricity grids and telecommunication networks. The Qinghai-Tibet railway project was started in June 2001.

6.6 Interprovincial co-operation

In 1995, the responsibility system of provincial governors for the 'rice sack' was adopted as a response to the question 'Who will feed China?'. Almost every province was urged to increase grain output and self-sufficiency was again encouraged. The sown area under grain expanded from 147.74 million ha in 1995 to 155.7 million ha in 1998 (which explains the excessive grain reserves), while market prices for major farm produce fell below government procurement prices. Farmers in the key grain-producing provinces suffered a lot.

The people's belief started to change as soon as the century-long ways of thinking changed. In 1999, the central government abolished the protective price for low-quality grains (spring wheat in the north-east, early rice in the south), which was a clear signal to scrap the grain self-sufficiency policy. These eastern provinces or municipalities were quick to take action and turn their eyes towards the land-abundant north-east.

The current development in the western region will be implemented via a new mechanism. Apart from the infrastructure, which is mainly funded by the central budget, other projects will not be in the form of a donation (or as poverty-relief) from the wealthier areas, but in the form of a win-win co-operation between east and west. Improving the infrastructure will lay solid and beneficial foundations for east-west co-operation, and restructuring agricultural production will benefit both areas. Land policy in the west is also very flexible.

The land-deficit coastal regions have capital and technical expertise, but lack natural resources and the space to expand business. The west is the opposite: it has various kinds of resources but not the money or skills to operate properly, which in the past often resulted in ecological disasters. Through contracts, the coastal regions will have a supplier of land-intensive products (mainly wheat, maize and soybean), so that they can use their limited land to grow more capital-intensive crops (such as vegetables, fruits and flowers), while the west will have a reliable buyer for its grain and other products at a reasonable price. Shanghai has signed an agreement with Inner Mongolia concerning grassland development (Hurenbeier): the former will establish a milk-processing factory to service large-scale farms. This will benefit both sides. Shanghai will have a low-cost production base to produce milk, which will provide the Inner Mongolian people with a considerable number of jobs and thus income. Milk will be produced and processed in Inner Mongolia and the products sold nation-wide (by, for example, Shanghai's Bright Company).

The land-deficit province of Zhejiang has held discussions with Jilin Province concerning co-operation in terms of the feed-grain trade. Zhejiang's animals will have reliable maize supplies from Jilin, and the latter will have a big investment in its major grain-producing (but relatively poor) counties. More land in Zhejiang will be switched from

grain production to vegetables, fruits, flowers and other crops. The two provinces have a common purpose: to develop their own comparative advantages and to use resources more efficiently. In June 2001, Zhejiang's entrepreneurs visited Sichuan and Yunnan Provinces and signed many contracts and promised investments amounting to almost nine billion yuan, mostly associated with agriculture and food processing. A government officer commented on this very positively: 'It's a good signal that the private (mainly non-agricultural) capital is going to the west to support agricultural development.' The significance of east-west co-operation has many advantages. For example:

- For the east the: the possibility to reduce the cost of land and labour, to use the plentiful resources (including rich biodiversity and agri-tourism), to have more space for further development, to expand the market in the west into neighbouring countries, etc.
- For the west: more rural labourers will be employed and their income will grow, more people will be trained in the necessary skills and management techniques, and to accumulate capital for further development, etc.

6.7 New policy for urbanisation

Policies have been adopted to encourage migrant farmers to buy an apartment in a county town or small city in the Yangtze Delta. About 30% of the Chinese population lives in an urban area. The size of the urban population has not kept pace with the rapid economic growth of the last two decades. It is time to accelerate urbanisation, especially in the eastern part of China. Many provinces are making plans to accelerate the pace of urbanisation. The provincial government of Zhejiang was the first to have its general programme of urbanisation approved by the central government; this occurred in 1999.

Urbanisation means that more farmers will leave their land and migrate to the towns, county centres or even PLCs. It is easier for the new settlers in the county towns because they often have relatives, and no difficulties with local habits and the dialect. The towns are close to original villages and these newcomers can find jobs mostly in TVEs and the service sector. It is unlikely that many farmers will move to a large city, such as Shanghai, Nanjing or Hangzhou. Nevertheless, a lot of migrants will give up their land-use rights to neighbours or relatives, which will help the latter to enlarge their production scale.

There are many disputes about the development strategy for small towns and big cities in China ¹. In the past, while encouraging the growth of small towns and the development of medium-sized cities in a planned way, the government insisted on limiting the size of big

¹ There is no strict demarcation between small and big cities in China. According to common understanding, small cities have a population of under 100,000, medium-sized cities a population of 200,000 - 800,000, and a big city a population of over a million. A city with a population of over two million people is an 'extra large' city.

cities. The experience of Zhejiang Province shows that this policy can have many negative consequences in a densely populated province, as it had in Japan. The policy has been changed to allow more rural residents to move to any kind of city, including Shanghai. In fact, both small and large cities have their advantages and disadvantages, and nobody can make an optimal plan for farmers to move to the cities or towns. The reasons are:

- The major outlet for off-farm workers seems to be the service sector in cities, followed by the processing industry, transportation and so on (as discussed about TVE₃ in section 5.4). The service sector can provide more opportunities for off-farm families. This sector is underdeveloped in rural areas; it can grow rapidly only in bigger towns and cities. This positive effect is the most important: it reduces unemployment and is good for social stability. However, the risks involved with moving to a large, unfamiliar city are great, and the housing and living costs are very high.
- It is national policy to encourage TVEs in rural areas to relocate to a town or small city in order to make pollution control more effective and less expensive.
- It is easier to monitor or stop the abuse of cultivated land for residential construction in an urban than in a rural area. Some reports gave many data showing better economic results in bigger cities or towns than in very small towns in terms of the protection of scarce farmland.
- Big cities tend to have better education and medical services, more information channels, and more cultural and recreation facilities, and hence a higher quality of life. The population growth rate in urban areas is much lower than in rural areas. Sometimes this means a better environment for investors.
- As urbanisation proceeds, more rural people will become an urban citizen in the full sense and enjoy a higher, stable income, and will eventually give up their land-use right. This will promote the enlargement of farm size and result in high labour productivity - a highly desirable outcome. However, this will be more plausible in relatively far away, medium-sized cities than in the nearby county towns.

6.8 China and the WTO

China's membership of the WTO will greatly affect the country's agricultural sector. China will soon engage in the free international trade of agricultural products, which means its agriculture will be subject to global changes in prices, market accessibility and trade rules concerning agricultural products. China will also have to fulfil the obligations it has committed itself to. WTO membership will also dramatically reduce the amount of unfair treatment imposed on China's agricultural sector by other countries, including non-tariff restrictions against China's exported farm products, thus facilitating their accession to the world market and expanding their market share. However, entry to the WTO will have both positive and negative impacts on China's agriculture.

- China will open its domestic market and revoke all non-tariff restrictions on imported farm products. As the government's protective policies on domestic farm products begin to be phased out, foreign farm products at lower prices will pose great challenges to their Chinese counterparts. Most domestic food-processing firms will face strong competition from powerful transnationals. In the short term, it will be a necessary but painstaking process to reform the SOEs and TVEs and improve their efficiency and profitability.
- The scale of influence of China's WTO membership will vary according to the farm product concerned. The domestic price of many land-intensive crops is already higher than that on the international market (see table 6.2). The flood of foreign farm products into China will put heavy pressure on farmers in the leading grain-producing provinces (where the farmers already have a relatively low income). These farmers will probably suffer from lower prices for imported grains and thus their income will go down in the short run. The restructuring of the production mix will be more urgent than ever before. Imports will drain the country's foreign exchange reserves.

- China will have more opportunities to export labour-intensive products, such as vegetables, fruits, flowers, animal products, processed foods, and fish and other aquatic products. The coastal regions where resources and the infrastructure are good for development of these products will benefit greatly from membership of the WTO (note: farmers in this region already have a relatively high income). To increase exports, however, China must make more efforts to increase their quality and sanitary controls to meet demand at the international market.

Table 6.2 Average price in domestic a) and international market: a comparison (in RMB yuan/ton)

| Year | 1999 | | Jan - Sept. 2000 | |
|---------------|----------|---------------|------------------|---------------|
| | Domestic | International | Domestic | International |
| Rice | 2,057 | 1,900 | 1,768 | 1,585 |
| Wheat | 1,341 | 0,949 | 1,200 | 1,100 |
| Corn | 1,119 | 0,745 | 0,931 | 0,729 |
| Soybean | 1,986 | 1,518 | 2,276 | 1,611 |
| Soybean oil | 7,385 | 3,675 | 5,874 | 2,856 |
| Rape-seed oil | 7,257 | 3,678 | 5,786 | 2,929 |

a) Domestic wholesale price

- As discussed, the income gap between the coastal and non-coastal regions will probably widen, at least in the short term. This makes it more urgent to support the grain producers in these suffering regions with reasonable policies and more investment in infrastructure, and by accelerating the development of the food processing industry and other labour-intensive activities. Interprovincial co-operation must receive support from the central government and be subject to more beneficial policies.
- If the global demand for grain continues to increase, its price will rise in the world market. Although this trend will give China a chance to promote its grain production and export (e.g. in the north-east), it will also be a burden if the country has to import more grain (especially feed grain for animal production).
- China must increase public funds for scientific research and technology development in order to support agribusiness and the processing industries. More private firms will

also put more funds into R&D institutions. China will attract more advanced technologies and talent from abroad (including overseas Chinese and students who have settled in the USA or Europe) to improve production, the management of agribusiness, and market chains. More attention will be paid to protect intellectual property rights.

- Some spheres have been monopolised by state-owned companies, but the monopoly in international trade will be broken. The amended Company Law provides more flexibility for private companies with the aim of reducing bank savings and encouraging more investment. The Yangtze Delta was the birthplace of modern capitalism in China. Private businessmen dominated Shanghai and the surrounding cities until 1949. Their emancipation will greatly promote agribusiness with its comparative advantage in the region. The state-owned trade companies have been reformed into entities that are responsible for their profits and losses. When private companies and more foreign investors are permitted to enter the once forbidden sectors, they will vitalise them, introduce competition and greatly increase efficiency.
- Possibly, it is the government that will face the biggest challenge when China joins the WTO. Governmental officials must renew their knowledge to meet the changed situation. The government must streamline its institutions in order to coordinate its ministries, which must have a much wider view of the food situation in the world market, price changes, trade opportunities, and so on and so forth. At least, the Ministry of Agriculture must not watch only field crops; equally important questions are: what will be supply of and demand for food (i.e. not only grain) in the world market, what product is the most profitable in the world market, and what role should China play in the changing market?

7. The Yangtze Delta and Beyond

The Yangtze Delta, with Shanghai as its centre, is the locomotive of the Chinese economy in this new century. Shanghai has set itself an ambitious goal: to regain its past glory in the coming two decades. The Yangtze Delta is a window. Through it people can judge the future development of the Chinese economy. This study on the Delta's agricultural situation and related issues is intended to reveal the great potential of the Delta as well as of the whole of China, and to show opportunities for international business persons.

7.1 The Delta in 2020

It is interesting to investigate what the agricultural sector in the Yangtze Delta will look like in two decades. In 1999, many provinces and CAMs worked out their own programmes concerning the modernisation of agriculture. In the following, data concerning developed countries are used for reference.

To gain a general picture of the Delta's possible future trend, it is reasonable to look at the programme of Shanghai Municipality. Shanghai is at the highest level of development in China. The time lag between Shanghai and neighbouring areas is 5 - 15 years; i.e. the current socio-economic situation of Shanghai will appear 5 -15 years later in other parts of the Yangtze Delta, and probably also in the Pearl River Delta (around Guangzhou) and the Beijing-Tianjin belt. Many people here believe that 'Shanghai's today is our tomorrow'. The following are some of the most important aspects relevant to our project.

- Land use. The majority of the land in suburban Shanghai is used for grain crops, but the proportion is shrinking. This trend will probably accelerate in the coming years. A larger area will be used for vegetables, melons and flowers. Compared with the Netherlands, the amount of grassland available for dairy farming will remain very small, even in Chongming County (there are no statistics at all).
- Agricultural labour force. The number of workers in the agricultural sector in Shanghai was 2.1 million in 1978 but only 656,200 in 1995. During that period, per worker output value at current prices jumped from 868 yuan to 27,807 yuan (a 550% increase at constant prices). It is projected that the agricultural labour force will be only 250,000 by 2020 in suburban Shanghai. If so, land area per worker will increase from the current 0.78 ha to 1.84 ha by 2020 (assuming the total area of cropland does not

not decrease). Even if 50% of farmers then specialise in horticulture, livestock or fishery, the farm size of other crop producers will remain quite small by European standards. This means that labour productivity will remain relatively low. With low labour productivity, the cost of farm products might be relatively high (as they are in Japan today).

- Urbanisation. There is no projection on urbanisation for the next two decades. However, according to possible changes in farm-labour force, the non-agricultural population will increase substantially. Assuming an average farm household of four persons, then 250,000 rural families in Shanghai imply a rural population of one million. Then the non-agricultural population will go up to about 93% of the total. Although a part of the non-agricultural population will keep their home in the rural area, the urban population will still possibly account for about 80%. This situation is comparable to most of the world's developed economies.
- Gross output value of agriculture (GOVA). The GOVA of Shanghai was 742 million yuan in 1970 and 5,986 million yuan in 1995 (both figures at current price). The most important factor is that the agricultural share in the GNP declined from 4.7% in 1970 to 2.4% in 1995. According to projections, this share will continue to drop to 1% by 2010 or 2020. In this respect, this indicator will be similar to the UK and other developed countries.
- Agricultural production structure. Crop production accounted for 60.3% of output value in 1980, and animal husbandry and fishery together had only 38.3% in Shanghai. The mix changed to 42.6% for crop farming and 57.2% for animal husbandry and fishery in 1995, and to almost 50 and 50%, respectively, in 1999. According to the preliminary projection, Shanghai will increase livestock and fishery production to 68%, while crop farming will drop to 30% and forestry to 2%. Of all crops, grain will comprise 40%, horticulture 50% and other cash crops 10%. Conventional animal husbandry will constitute 40%, special high-value animals 50%, and ocean fishery 10%. This is only today's assumption. The ultimate say, however, belongs to the domestic and international market.
- Food consumption. The future situation will possibly be as shown in table 7.1. However, some figures are open to debate. First of all is food grain. This estimate does not consider the increase in people's income: consumers with a higher income tend to consume less grain. Assuming that the urban population will increase to 80% of the total in Shanghai and that their consumption pattern remains the same as it was in 1997 (table 5.1), the per capita demand for food grain will decrease to 80 kg by 2020, rather than 120 kg. Less grain demand ¹ means that some of the land area under grain crop can be used for other purposes (e.g. for producing vegetables, melons, flowers, etc.) or

¹ On the other hand, more feed grain will be necessary to support the development of animal husbandry, although the feed grain can be transported from e.g. the north-east or be imported.

be rotated with green-manure crop or grass for dairy production. The figure for milk consumption seems to be very conservative for Shanghai as the young generation grows up. In addition, the projections for vegetable and pork are also doubtful (see tables 5.1 and 5.2).

An interesting message from this table is that self-sufficiency in many foods (especially milk, poultry, eggs, fish and vegetables) will decrease considerably. The neighbouring provinces will fill the gaps. Because of traditional habits and geographical differences, Shanghai's consumption pattern will by no means coincide with that of Guangzhou or Beijing (for example, the northern Chinese like wheat flour more). However, that gives us some hints about the future trends in the relatively wealthy coastal region of China.

Table 7.1 Consumption of and self-sufficiency in major foods in Shanghai a)

| | Consumption per capita (kg) | | | Self-sufficiency (%) | | |
|--------------|-----------------------------|------|------|----------------------|------|------|
| | 2000 | 2010 | 2020 | 2000 | 2010 | 2020 |
| Food grain | 140 | 130 | 120 | 60 | 58 | 59 |
| Vegetable | 110 | 110 | 110 | 75 | 75 | 70 |
| Pork | 20 | 20 | 20 | 60 | 58 | 58 |
| Poultry meat | 31 | 35 | 38 | 60 | 52 | 45 |
| Eggs | 12 | 12 | 12 | 74 | 65 | 57 |
| Milk | 22 | 26 | 30 | 75 | 68 | 56 |
| Fish | 27 | 33 | 40 | 48 | 40 | 30 |

a) SAAS projections

7.2 From the Delta to coastal China

Shanghai aims to become an international economic, financial, trade and transport centre. Another 30 billion RMB yuan will be poured into new infrastructure projects and the improvement of the environment. A bridge/tunnel link spanning the Yangtze River will be completed within five years. About 50% of the international giants on the Top 500 list have already established their Far East manufacturing base in Pudong.

In 2000, Shanghai Municipality as a whole (i.e. including all suburban counties) crossed an important threshold in terms of economic growth, viz. a per capita GDP of USD 4,000. According some projections, this figure will be around USD 8,000 by 2010.

The main foreign investors in this region are Japan, the USA, Germany and South Korea. These economies are also China's main trade partners. Hong Kong ¹ has the closest ties with Guangdong Province, while Taiwan businesses invest mostly in Fujian Province. The powerful international corporations are focussing on Shanghai and surrounding regions; some have moved their headquarters from Hong Kong to Shanghai. There is evidence that Hong Kong's entrepreneurs are tending to move their business to Pudong in order to further develop it, while Taiwan businesses are hurrying to Shanghai to avoid further losses in the

¹ Hong Kong and Taiwan are also included in this category. Hong Kong is one of the most important trade partners of and investors in mainland China.

island's gloomy economy. Suzhou City has set up an industrial park for Singaporean businesses. The park is quite successful and the foreign partners will increase their investments in future.

The Delta's economy has been growing by 10% for almost 20 years now, and by 2010 the per capita GDP in South Jiangsu and North Zhejiang will increase to USD 2,500 - 3,000. The purchasing power here is also growing rapidly. The Delta, with its population of over 50 million, covers an area just a little larger than that of the Netherlands. Together, Shanghai Municipality and the provinces of Jiangsu and Zhejiang have an area five times that of the Netherlands, and almost eight times the Dutch population (over 130 million). In 1999, the population of the whole coastal region of China exceeded 500 million (see figure 2.5), while that of the EU-15 was only about 320 million. As the most dynamic economic region in Asia, this region is indeed an attractive market.

7.3 The non-coastal region

The population of the coastal region accounts for less than 40% of the nation's total. The central and the western part of China (or the non-coastal region; NCR) comprise 33% and 28%, respectively, of the country. For a long time, the NCR contributed mainly non-processed materials as well as numerous kinds of resources to the large industrial centres. The grain self-sufficiency policy made these regions key production bases for grains, cotton, vegetables, fruits and many other products, while processing and the majority of added value went to the big cities. The farmers' income from these products was quite low. The NCR missed the best opportunities to develop TVEs in the early years after the reform.

Some economists have noted an abnormal phenomenon, in that Chinese exports constituted over one-fifth of GDP (i.e. the trade-dependency ratio; TDR) in 1997 as a large economy (in terms of territory and population). While small economies (e.g. Singapore, Hong Kong and the Netherlands) may reach a very high TDR, large economies tend to have a smaller percentage of merchandise export in GDP¹. China's high TDR can be explained by many factors, including cheap labour and low production costs, distortions of foreign exchanges, etc., but the low domestic demand is one of the important reasons.

Low domestic demand is mainly the result of low farmers' income in the NCR. The income growth trend in the NCR will have national significance. This again shows the importance of the western region development strategy - but not only of the 12 province-level units. The central part of China (eight provinces with about 420 million people) is the key to linking east and west.

¹ Trade-dependency ratio (TDR) is the percentage of export value in the total GDP of an economy. According to data of the World Bank, the TDR for some large economies is normally below 10%, e.g. the TDR for the USA was 8.1% in 1997, for Brazil 6.4%, for India 8.4%, and for 20.3%. TDR can be very high for small economies: Singapore 129.2%, Hong Kong 109.7% and the Netherlands 51.2% in 1997.

The inter-regional co-operation and western development will probably change the current situation substantially. Fuelled by central government policy and capital from the coastal region, TVE₃ will in the near future grow rapidly in the NCR (see section 5.4). Some of provinces in the NCR already have good universities and research institutes, a solid industrial foundation, good infrastructure, a plentiful labour force and plentiful natural resources. Many entrepreneurs in the coastal region have begun co-operation with the inland companies. It is not only Chinese businessmen who are looking at the huge market opportunities in the NCR: also many international companies are ready to go west and north. The rich resources and cheap labour force are attractive. In particular, the dairy industry is rapidly expanding in many provinces. For example, Nestlé has set up a dairy processing company in Shuangcheng (Heilongjiang Province). According to the projections in the current FYP, the per capita income of China will double again within five to ten years. Once the hundreds of millions of people in the NCR have doubled their income, demand will increase enormously.

An increase in domestic demand will also promote imports. It is an assumption that China's labour cost will also go up, step by step, for two or three decades as a result of the growth in people's income. Then the comparative advantage of the Chinese economy will change, and its export share in GDP (TDR) will decline to the normal level of a large economy.

7.4 China: the world's third largest economy?

China has experienced 20 years of rapid economic growth. The average annual growth rate of GDP in China was 10.1% for 1980-1990 and 10.7% for 1990-1999¹ - the highest among more than 130 countries.

There are many projections concerning China's economic growth in the next two decades. Both domestic scholars and international sources share a common view that China will maintain a high growth rate (6 - 7% annually) for a relatively long period (20 - 30 years). If that projection is correct, China will become the world's third largest economy, after the USA and Japan. Some economists have argued that on the basis of PPP², China has already overtaken Japan to become the world's second largest economy. Nevertheless, China will remain relatively poor in terms of per capita GDP, even though it will rise from today's USD 800 to about USD 1,600. The coastal region, including the Yangtze Delta, will have a higher growth rate. It can be expected that a considerable proportion of the coastal population will

¹ See table 4.2, in World Bank: *World Development Report 2000/2001*.

² PPP refers to purchasing power parity. China's GNP in 1999 was USD 980.2 billion, but USD 4,112.2 billion when measured in PPP. See figure 2.3. World Bank, *World Development Report 2000/ 2001*

enjoy a relatively wealthy life in 2010. Their disposable income per capita will increase to 12,000 - 16,000 yuan (USD 1,450 - 1,930) in the urban area, while the rural population will have a net income of 6,000 - 12,000 yuan (USD 725 - 1,450). China's economic restructuring over the past two decades has been very successful. Negotiations between China and the USA and other trade partners over China's accession to the WTO have been completed. There is no major hurdle left on the road towards membership. It is thought that China will join in November 2001.

China's trade structure is changing: its ranking in terms of international trade is now number eight. The share of manufactured goods rose from 72% in 1990 to 87% in 1998. The country has become one of the largest centres in the world for many kinds of manufacturing, e.g. textiles and clothes, machinery, electronics products and so on. These sectors are among the most competitive in the world. China's imports are growing rapidly. The EU is becoming more important as a trade partner in the international market to balance the USA. Strong complementarity is an important basis of mutual trade. The China-EU trade volume was USD 55.7 billion in 1999; in the same year, China's exports to the EU were up by 7.5%. It would be a great mistake for a business, wherever it is located, to neglect the Chinese market, especially that in its coastal region. The imports from the EU are usually high-tech products and industrial materials. In 1999, China introduced a total of 280 high-tech projects (worth USD 2.46 billion) from the EU, accounting for 65.8% of China's total high-tech imports.

There is a great difference, however, among EU members as regards trade with China. Take Shanghai as an example (data are not available for other Chinese cities). Within the EU, Germany is China's major trade partner; France became more active in the late 1990s. However, the Netherlands ranks only sixth in Shanghai. There was a big trade deficit between the Netherlands and Shanghai, with Dutch exports less than those to Belgium.

Table 7.2 Shanghai's import value from selected European countries (1978-98, in USD million)

| | 1978 | 1980 | 1985 | 1990 | 1997 | 1998 |
|-------------|------|------|------|------|------|------|
| Germany | 13 | 34 | 324 | 346 | 828 | 905 |
| France | 2 | 1 | 9 | 11 | 80 | 390 |
| Italy | 5 | 3 | 26 | 30 | 134 | 166 |
| Belgium | 2 | 3 | 11 | 21 | 88 | 123 |
| UK | 4 | 7 | 84 | 48 | 106 | 117 |
| Netherlands | 3 | 2 | 10 | 9 | 33 | 112 |
| Switzerland | 5 | 7 | 56 | 22 | 46 | 68 |
| Sweden | 2 | 1 | 10 | 9 | 41 | 60 |

| | | | | | | |
|--------|----|----|-----|-----|-------|-------|
| Europe | 41 | 65 | 574 | 526 | 1,651 | 2,139 |
|--------|----|----|-----|-----|-------|-------|

List of abbreviations

| | |
|-------|---|
| CAAS | Chinese Academy of Agricultural Sciences (Beijing) |
| CAMs | Centrally administered municipalities (Beijing, Shanghai, Tianjin and Chongqing) |
| CGIAR | Consultative Group of International Agricultural Research |
| CPC | Communist Party of China |
| FAO | Food and Agriculture Organisation |
| FTZ | Free trade zone |
| FYP | Five-Year Plan |
| GDP | Gross domestic product |
| GNP | Gross national product |
| GOVA | Gross output value of agriculture |
| HRS | Household responsibility system |
| MOA | Ministry of Agriculture |
| NCR | Non-coastal-region |
| PLCs | Prefecture-level cities |
| RMB | Renminbi, or yuan, Chinese currency. About 8.28 to 1 US dollar |
| SAAS | Shanghai Academy of Agricultural Sciences |
| SARs | Special administrative regions (Hong Kong and Macao) |
| SEZs | Special economic zones (i.e. Shenzhen, Zhuhai, Shantou in Guangdong Province, Xiamen in Fujian Province, and Hainan Province) |
| SOE | State-owned enterprise |
| SPC | State Planning Commission |
| TDR | Trade-dependency ratio |
| TVE | Township and village enterprise |
| USDA | United States Department of Agriculture |
| WTO | World Trade Organisation |

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